

JVC

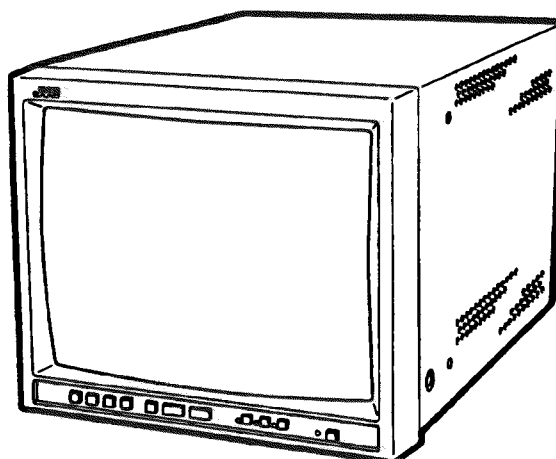
SERVICE MANUAL

COLOUR VIDEO MONITOR

BASIC CHASSIS

A17

TM-1700PN-S



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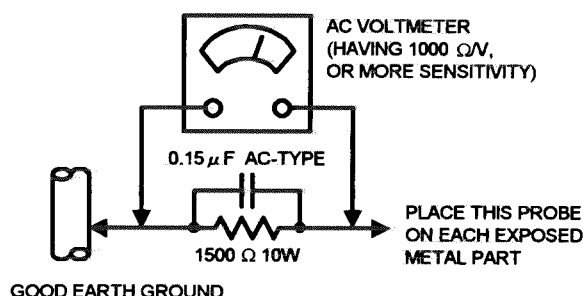
SPECIFICATIONS

Item	Content
Colour system Picture tube Effective screen size Scanning frequency Horizontal resolution Colour Temperature	PAL / NTSC 3.58 44cm measured diagonally, flat square type, 90° deflection, in-line gun, vertical line trio type (phosphor stripe pitch of 0.42 mm) 330mm × 250mm (W × H) / 410mm (Diagonal) (H) 15.734 kHz (NTSC) 15.625 kHz (PAL) (V) 59.94 Hz (NTSC) 50Hz (PAL) 550TV line or more (Y/C input mode) 6500K;x=0.313, y=0.329 9300K;x=0.283, y=0.297
High Voltage	23.8kV~26.2kV
Signal input / output Composite video signal Y/C Separate (1line) Audio	INPUT A,B(2lines) : BNC × 2each (with 1 bridge-connected output) With automatic termination 1Vp-p 75Ω negative sync Mini-DIN × 2each (4pin) (with 1 bridge-connected output) with automatic termination Y: 1.0Vp-p 75Ω C: 0.286Vp-p 75Ω (NTSC) 0.3Vp-p 75Ω (PAL) AUDIO A, B : RCA × 2each Monaural 0.5Vrms, high-impedance (with 1 bridge-connection output)
Audio power output Speaker Remote control input	1W (Monaural) 8cm round × 1 8Ω RCA × 2 (with 1 bridge-connected output) BPS & 16:9 control
Power requirements Power consumption Operation temperature Operation humidity	230V AC, 50/60 Hz 0.6A maximum 0 ~ 40°C 20 ~ 80% (non-condensing)
Dimension Mass	395mm × 334mm × 420.5mm (W × H × D) 17.2kg

Design & specification are subject to change without notice.

SAFETY PRECAUTIONS

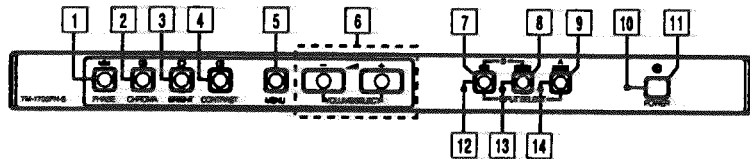
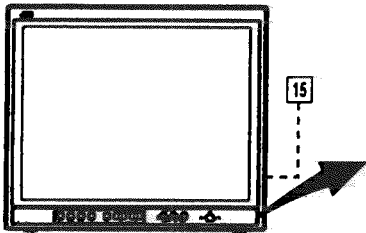
- The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
- Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (\perp) side GND, the ISOLATED(NEUTRAL) : (⏏) side GND and EARTH : (\oplus) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.
- If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
- The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
- Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k Ω 2W resistor to the anode button.
- When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
- Isolation Check**
(Safety for Electrical Shock Hazard)
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
 - Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(... Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.
 - Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).
● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



FUNCTIONS

FRONT VIEW

<Front Panel>



1 Phase button [PHASE]

Press this button to set the picture hue adjustment mode. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

2 Chroma button [CHROMA]

Press this button to set the picture colour density adjustment mode. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

3 Brightness button [BRIGHT]

Press this button to adjust picture brightness. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

4 Contrast button [CONTRAST]

Press this button to adjust picture contrast. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

5 Menu button [MENU]

Displays and disappears the <MENU> screen. Pressing the PHASE button with the Menu button depressed will display the <SET-UP MENU> screen.

6 Volume/Select buttons [VOLUME/SELECT - +]

Adjusts the speaker volume. Also used as a control button in the menu function mode.

7 Input B (Y/C) button [INPUT SELECT B]

Selects the video signal input to the VIDEO B (Y/C) terminal (mini DIN 4 pin connector) and the audio signal input to the AUDIO B terminal (RCA connector) on the rear panel. When selected, the input B (Y/C) indicator lights.

8 Input B (VIDEO) button [INPUT SELECT B]

Selects the video signal input to the VIDEO B terminal (BNC connector) and the audio signal input to the AUDIO B terminal (RCA connector) on the rear panel. When selected, the input B (VIDEO) indicator lights.

9 Input A (VIDEO) button [INPUT SELECT A]

Selects the video signal input to the VIDEO A terminal (BNC connector) and the audio signal input to the AUDIO A terminal (RCA connector) on the rear panel. When selected, the input A (VIDEO) indicator lights.

10 Power indicator

Lights in green when the power is ON.

Lit : When the power is on.

Unlit : When the power is off.

11 Power switch [POWER]

Press this switch to turn the power on or off.

ON : Power is turned on.

OFF : Power is turned off.

12 Input B (Y/C) indicator

Lights in green when the Input B (Y/C) is selected.

13 Input B (VIDEO) indicator

Lights in green when the Input B (VIDEO) is selected.

14 Input A (VIDEO) indicator

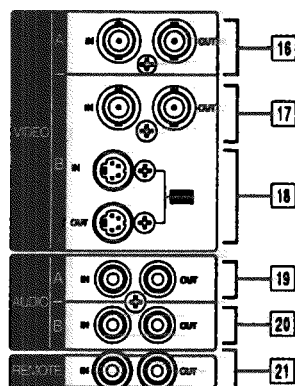
Lights in green when the Input A (VIDEO) is selected.

15 Speaker

A built-in speaker is located inside the right side panel when the monitor is viewed from the front.

REAR VIEW

<Rear Panel>



16 Video A terminals [VIDEO A IN/OUT]

Video signal input (IN) and output (OUT) terminals.

The output terminal is bridge-connected.

IN : Video signal input terminal

OUT : Bridge-connected video signal output terminal

Notes:

* For corresponding audio signals, use the AUDIO A terminals 19.

17 Video B terminals [VIDEO B IN/OUT]

Video signal input (IN) and output (OUT) terminals.

The output terminal is bridge-connected.

IN : Video signal input terminal

OUT : Bridge-connected video signal output terminal

Notes:

* For corresponding audio signals, use the AUDIO B terminals 20.

18 Video B (Y/C) terminals [VIDEO B Y/C IN/OUT]

Y/C (S-Video) signal input (IN) and output (OUT) terminals.

The output terminal is bridge-connected.

IN : Y/C-separated (S-video) signal input terminal

OUT : Bridge-connected Y/C-separated (S-video) signal output terminal

Notes:

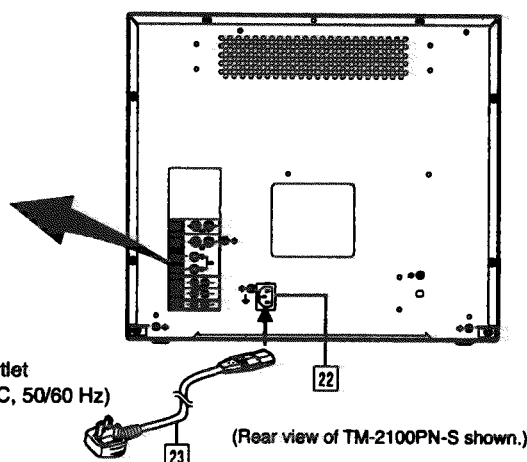
* For corresponding audio signals, use the AUDIO B terminals 20.

19 Audio A terminal [AUDIO A IN/OUT]

Input (IN) and output (OUT) terminals for the audio signal corresponding to the VIDEO A terminals 16. The output terminal is bridge-connected.

IN : Audio signal input terminal

OUT : Bridge-connected audio signal output terminal



Notes:

* For corresponding video signals, use the VIDEO A terminal 16.

20 Audio B terminals [AUDIO B IN/OUT]

Input (IN) and output (OUT) terminals for the audio signals corresponding to the VIDEO B terminals 17 or VIDEO B (Y/C) terminals 18. The output terminal is bridge-connected.

IN : Audio signal input terminal

OUT : Bridge-connected audio signal output terminal

Notes:

* For corresponding video signals, use the VIDEO B terminals 17 or VIDEO B (Y/C) terminals 18.

21 Remote terminals [REMOTE IN/OUT]

Input (IN) and output (OUT) terminals for external control. The output terminal is bridge-connected. External control is available either to select the ASPECT RATIO or to select ON or OFF in BRIGHTNESS P.S. function mode. Set the external control in the <SET-UP MENU> screen mode.

External control functions	External control switch	
	Open circuit (open)	Short circuit (short)
ASPECT RATIO	4-3 (4:3)	16-9 (16:9)
BRIGHTNESS P.S.	OFF	ON

22 AC Inlet [AC IN]

Power input connector. Connect the provided AC power cord 23 to an AC outlet (230 V AC, 50/60 Hz).

23 Power cord

Connects the provided power cord (230 V AC, 50/60 Hz) to the AC IN connector.

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

[CAUTION]

- * Even with the power switch off, some parts of the set are live. Be sure to disconnect the power cord from the AC outlet before disassembly and reassembly.

REMOVING THE TOP COVER

1. Take out 8 screws marked (A) .
2. Slightly spread the bottom of the top cover. Shift the cover rearward and raise it upward to remove it.

REMOVING THE REAR PANEL

- After remove the top cover.
- 1. Take out 3 screws marked (B) and 2 screws maked (C) .
- 2. Shift the top portion of the rear panel slightly rearward and raise it upward to remove it.

REMOVING THE TERMINAL BRACKET

- Remove the top cover and rear panel.
- 1. Take out 5 screws marked (D) and 1 screw marked (E) .
- 2. Slightly shift the terminal bracket rearward and raise it upward to remove it.

REMOVING THE FBT HOLDER

- Remove the top cover and rear panel.
- 1. Remove the 1 screw marked (F) .
- 2. While lift up FBT HOLDER, then withdraw it toward you as shown in figure.

REMOVING THE CHASSIS

- Remove the top cover, rear panel and FBT HOLDER.
- 1. Remove the 1 screw marked (G) .
- 2. While pulling the chassis remove it.

REMOVING THE SPEAKER HOLDER

- Remove the top cover.
- 1. Remove the 1 screw marked (H) .
- 2. Lift the speaker holder, then remove it.

REMOVING THE SPEAKER

- Remove the speaker holder.
- 1. Push the claws slightly, and shift the speaker to downward, and remove it away (Fig. 2).

CHECKING THE PW BOARD

To check the back side of the PW board.

- (1) Pull out the chassis.
- (2) Erect the chassis vertically so that you can easily check the back side of the PW board.

[CAUTION]

- * When erecting the chassis, be careful so that there will be no contacting with other PW board.

- * Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires With a new cable tie.

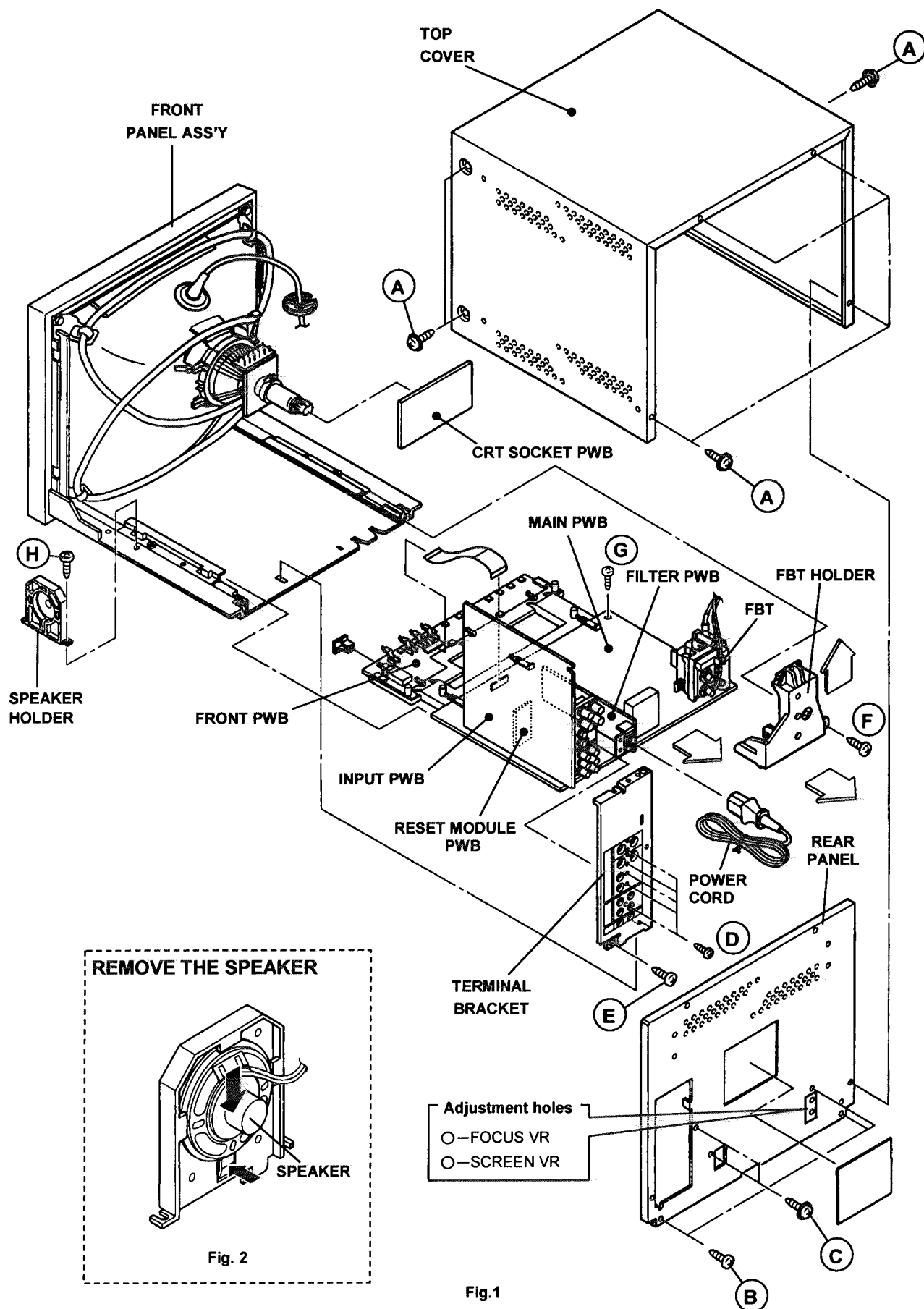


Fig.1

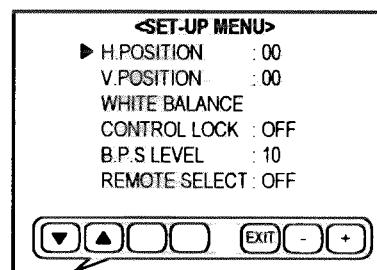
MEMORY IC REPLACEMENT NOTES

This model uses non-volatile memory ICs. When these are replaced, the data must be reset.

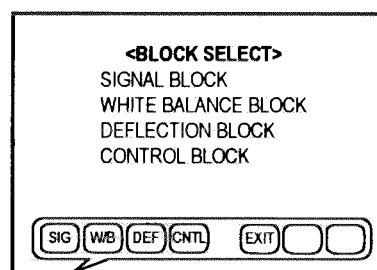
Video and deflection system data are stored in MEMORY IC. If this is replaced without entering the data, a normal picture will not be obtained. When replacing, be sure to use an IC containing the (initial value) data.

■ PROCEDURE FOR REPLACING MEMORY IC

1. Switch off the power and disconnect the power cord from the outlet.
2. Replace the MEMORY IC.
Be sure to use an IC containing the (initial value) data.
3. Reconnect the power cord to the outlet and power on.
4. Check and set SET-UP MENU.
 - 1) Press MENU key and PHASE key simultaneously.
 - 2) The screen displays the SET-UP MENU.
 - 3) Check the values of SET-UP MENU refer to the table given below.
5. Refer to the initial setting values that table given below and enter the setting values.
6. Perform adjustments according to the adjustment items.
7. Confirm the INITIAL SETTINGS OF THE SERVICE MENU. For setting SERVICE MENU items, refer to the SERVICE ADJUSTMENTS.



SET-UP MENU



SERVICE MAIN MENU

■ INITIAL SETTING VALUES IN SERVICE ADJUSTMENTS

FRONT PANEL SETTING

SETTING ITEMS	VALUES
INPUT SELECT	Input A
CONTRAST	00
BRIGHT	00
CHROMA	00
PHASE	00
VOLUME	20

MENU SCREEN SETTING (USER SETTING)

SETTING ITEMS	VALUES
SHARPNESS	00
COLOR TEMP.	6500
COLOR SYSTEM	AUTO
ASPECT RATIO	4 - 3
BRIGHTNESS P.S	OFF

SET-UP MENU SCREEN SETTING

SETTING ITEMS			VALUES
H. POSITION			00
V. POSITION			00
WHITE BALANCE	6500	CUTOFF	ALL 00 (R.G.B)
		DRIVE	
	9300	CUTOFF	
		DRIVE	
CONTROL LOCK			OFF
B.P.S LEVEL			10
REMOTE SELECT			OFF

SERVICE MENU SETTING ITEMS

BLOCK	ITEM	CONTENTS	
1.SIGNAL BLOCK	S01	MAIN	BRIGHT
	S02		CONTRAST
	S03	PAL	CHROMA
	S04	NTSC	CHROMA
	S05		PHASE
	S06	RGB CORRECT	BRIGHT
	S07		CONTRAST
	S08	UNDER SCAN	BRIGHT CORRECT
2.WHITE BALANCE BLOCK	W01	CUTOFF	R
	W02		G
	W03		B
	W04	D65 DRIVE	R
	W05		B
	W06	D93 DRIVE	R
	W07		B
	W08	RGB CUTOFF CORRECT	R
	W09		G
	W10		B
	W11	UNDER SCAN CUTOFF CORRECT	R
	W12		G
	W13		B
3.DEFLECTION BLOCK	D01	HORIZONTAL CENTER	
	D02	HORIZONTAL SIZE	
	D03	EW-PIN CUSHION	
	D04	EW-CORRECTION	
	D05	TRAPEZOIDAL	
	D06	VERTICAL SLOPE	
	D07	VERTICAL SIZE	
	D08	VERTICAL LINEARITY	
	D09	VERTICAL SHIFT	
4.CONTROL BLOCK	C01	SYSTEM	
	C02	BRIGHT POINT	UP
	C03		DOWN
	C04	CONTRAST POINT	UP
	C05		DOWN
	C06	CHROMA POINT	UP
	C07		DOWN
	C08	PHASE POINT	UP
	C09		DOWN
	C10	OSD H POSITION	
	C11	OSD VF 50Hz	
	C12	OSD VF 60Hz	
	C13	Y DELAY NTSC VIDEO	
	C14	Y DELAY PAL VIDEO	
	C15	Y DELAY NTSC S VIDEO	
	C16	Y DELAY PAL S VIDEO	
	C17	G DRIVE	
	C18	VERTICAL SHIFT RGB	
	C19	HORIZONTAL CENTER RGB	
	C20	BRIGHT SERVICE	
	C21	APERTURE CENTER	
	C22	VERTICAL GUARD	
	C23	HOUR METER	

SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. Supply power to the set and measuring instruments and allow to warm up for at least 30 minutes.
2. Confirm the proper AC power voltage is being supplied.
3. The setting is made on basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
4. Use care not to disturb controls and switches not mentioned in the adjustment items.
5. Refer to adjustment settings and set user operated controls (BRIGHT, CONTRAST, PHASE, CHROMA, etc.) to the indicated positions.

MEASUREING INSTRUMENTS AND FIXTURES

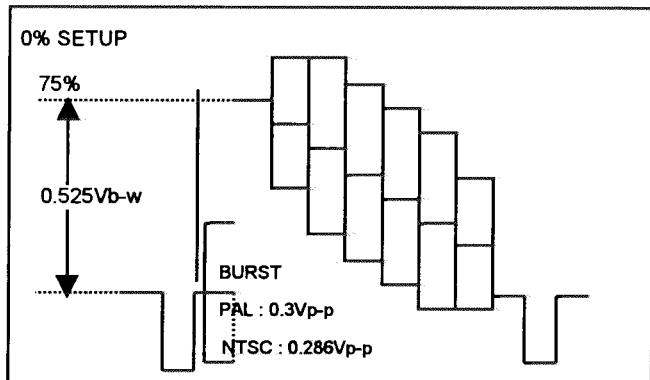
- DC voltmeter (digital voltmeter)
- Oscilloscope
- Signal generator (PAL/NTSC systems)
 - Colour bar and split color bar patterns
 - Crosshatch pattern
 - Cross pattern
 - Red raster pattern
 - Green raster pattern
 - Blue raster pattern
 - Philips pattern (including R-Y and B-Y)
 - TV resolution pattern

The wave form of signals refer following figure.

- Colour analyzer
- High voltage meter

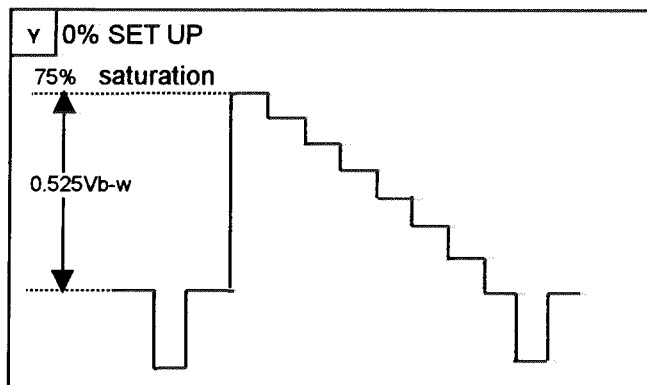
VIDEO SIGNAL

- COLOUR BAR (PAL / NTSC) SIGNAL

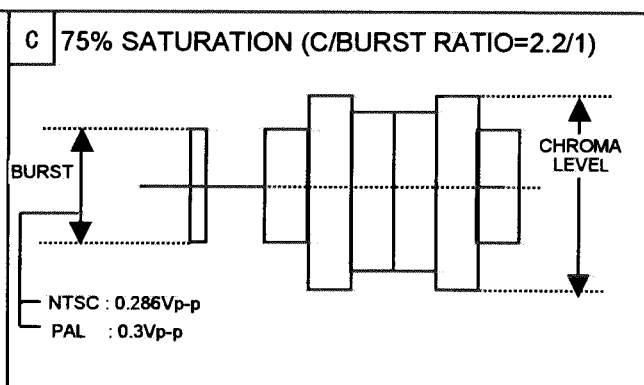


Y/C SEPARATE SIGNAL

- COLOUR BAR SIGNAL



- COLOUR BAR SIGNAL



ADJUSTMENT SETTINGS

1. Front controls

PHASE	00
CHROMA	00
BRIGHT	00
CONTRAST	00
VOLUME	20

2. Front switches

INPUT SELECT	VIDEO A
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3. MENU screen

SHARPNESS	00
COLOR TEMP	6500
COLOR SYSTEM	AUTO
ASPECT RATIO	4 - 3
BRIGHTNESS P.S	OFF

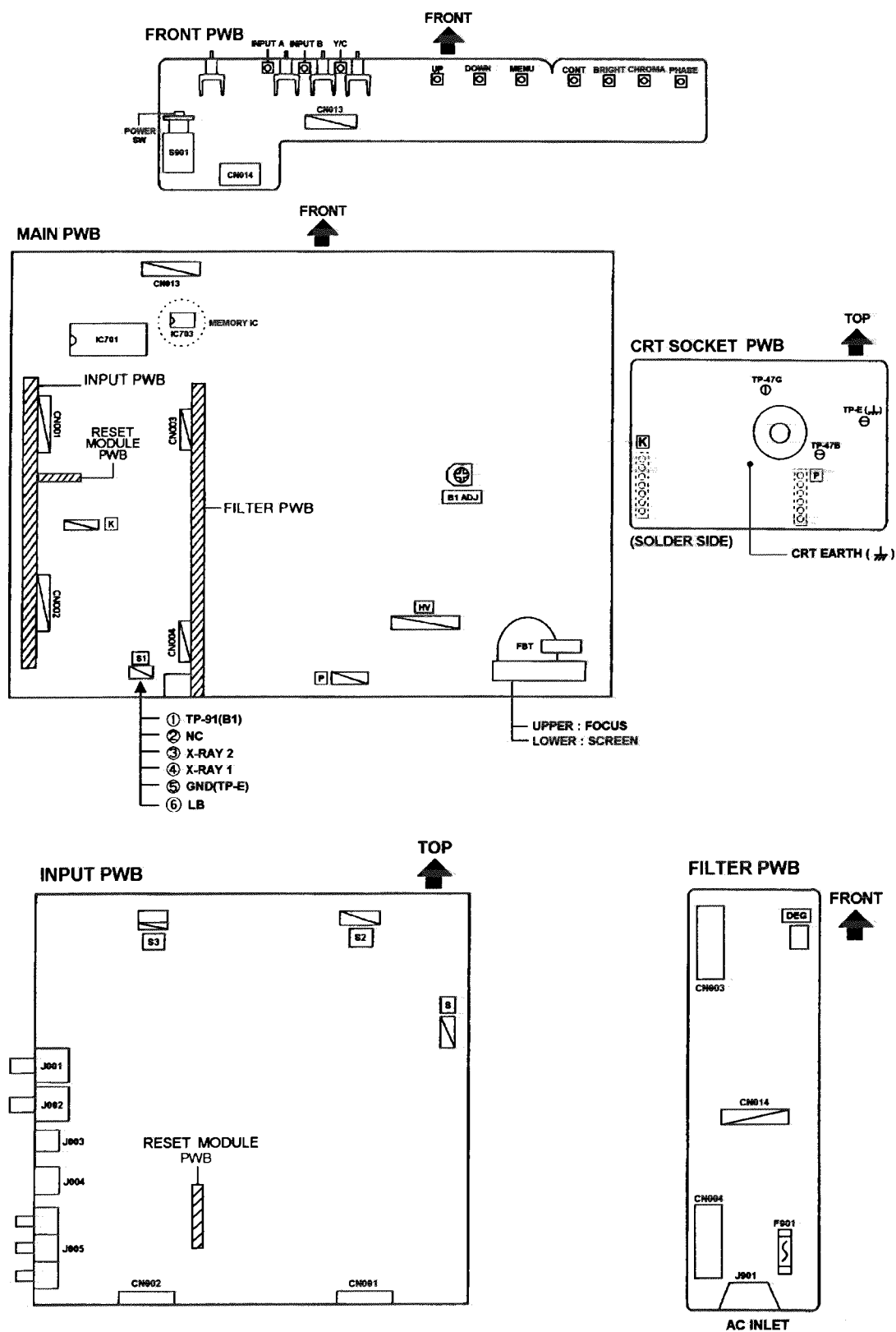
FOCUS AND SCREEN ADJUSTMENT HOLES

- The FOCUS and SCREEN adjustment holes are on the rear panel.

[CAUTION]

Be sure to use a non-metallic driver for adjusting there VRs.
A metallic driver can cause damage by shorting.

ADJUSTMENT LOCATIONS



BASIC OPERATION OF SERVICE MENU

1. SERVICE MENU ITEMS

With the SERVICE MENU, various settings can be made, and they are broadly classified in the following items of adjustments.

Don't change the values, if not to necessary.

SIGNAL BLOCK This mode adjusts the data of the various signal voltage controls.

WHITE BALANCE BLOCK This mode adjusts the data of the WHITE BALANCE adjustment.

DEFLECTION BLOCK This mode adjusts the data of the DEFLECTION circuit.

CONTROL BLOCK This mode adjusts the whole of the systems

2. BASIC OPERATION OF THE SERVICE MENU

(1) HOW TO ENTER THE SERVICE MENU

- ① Press **MENU** key and **CONTRAST** key simultaneously.
- ② The letter "S" appears at the upper left of the screen.(Fig.1)
- ③ Press **MENU** key and **PHASE** key simultaneously.
- ④ The screen display "PLEASE DON'T TOUCH".(Fig.2)
- ⑤ Press + key or - key to display the SERVICE MENU as shown in Fig.3.

If step ④ state continues for more than 5 seconds without a further operation, the display extinguishes and the mode is released.

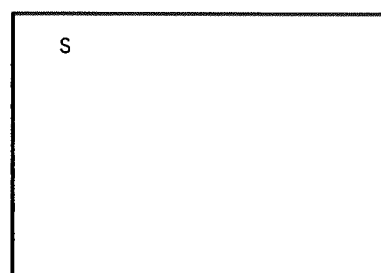


Fig. 1



Fig. 2

(2) SELECT OF SUB MENU SCREEN

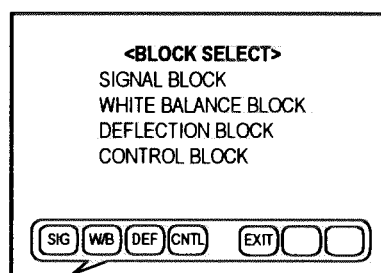
- While the SERVICE MAIN MENU is displayed.
In accordance with the key control display at the lower side of the screen, operate the various items.

SIGNAL BLOCK Press the **PHASE** key

WHITE BALANCE BLOCK Press the **CHROMA** key

DEFLECTION BLOCK Press the **BRIGHT** key

CONTROL BLOCK Press the **CONTRAST** key



SERVICE MAIN MENU

Fig. 3

(3) SETTING VALUE CHANGES

- While the adjustment mode menu is displayed.(Fig.4)
- ① Press the +key to change the setting value in the + direction.
- ② Press the -key to change the setting value in the - direction.
- ③ Press the **PHASE** key or **CHROMA** key to change the adjustment items.

(4) SERVICE MENU EXIT

- ① When settings are completed, press **MENU** key.
- ② The SERVICE MAIN MENU returns.
- ③ Again press **MENU** key.
The screen display extinguishes and the SERVICE MENU is exited.

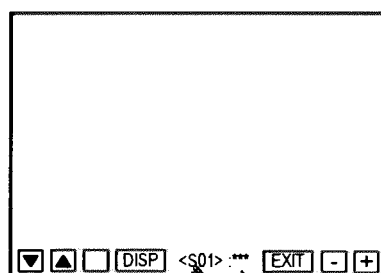


Fig. 4

3. HOW TO OPERATE SERVICE MENU ITEMS

■ SIGNAL BLOCK

- ① Press the **PHASE** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).
- ② Then displays the SIGNAL BLOCK adjustment screen (Fig.5)
- ③ The select item is shown by the SERVICE Number at the lower of the screen.
- ④ Key control operation are displays as same as the screen lower.

The key operations of this mode are following as shown below.
CONTRAST key is the switch of the screen display. If necessary, you can shut off the display. Carefully, values of SERVICE MENU adjustment items are changed while shut off the screen display.

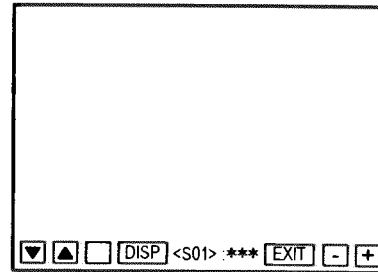
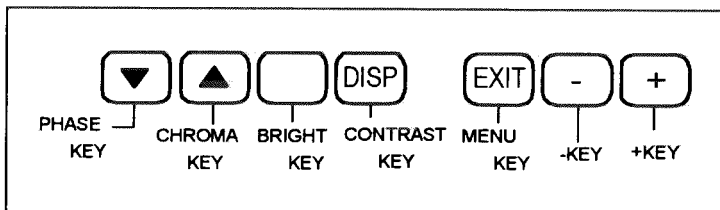


Fig. 5



- ⑤ Press the MENU key, then exit from the SIGNAL BLOCK screen to return to the <BLOCK SELECT> screen.

■ WHITE BALANCE BLOCK

- ① Press the **CHROMA** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).
- ② Then screen displays the WHITE BALANCE BLOCK adjustment screen (Fig.6)

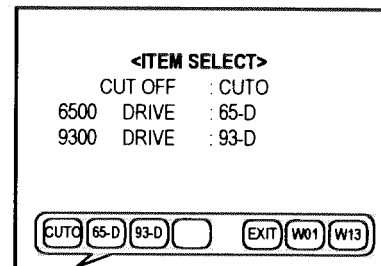
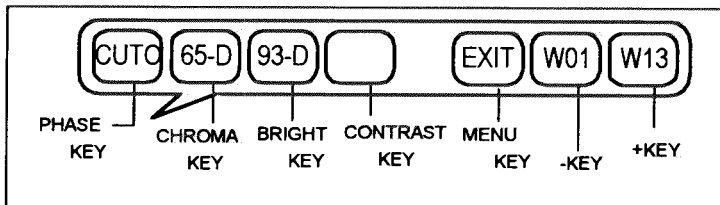


Fig. 6



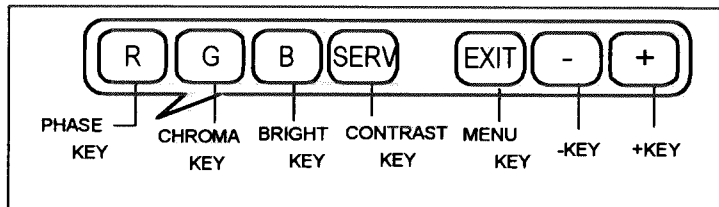
- ③ The select item is shown by the SERVICE Number at the lower of the screen.
- ④ Press the MENU key few times, then exit from the WHITE BALANCE BLOCK screen to return to the <BLOCK SELECT> screen.

[WHITE BALANCE Adjustment : METHOD 1]

Accordance with the screen, select the WHITE BALANCE mode that following below.

● **CUTOFF adjustment mode (LOW LIGHT)**

Press the **PHASE** key, then enter the CUTOFF adjustment mode as shown in Fig.7 (LOW LIGHT adjustment mode). In this case, key control is changed as shown below.



Press key of the SERV displaying. Shown one horizontal line on or off.

● **6500 / 9300 drive adjustment mode (HIGH LIGHT)**

Press the **CHROMA** or **BRIGHT** key, then enter the 6500 drive (or 9300 drive) adjustment mode as shown in Fig.8 (HIGH LIGHT adjustment mode). In this case, key control is changed as shown below.

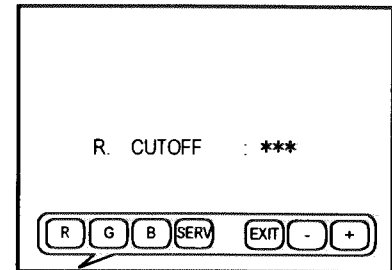
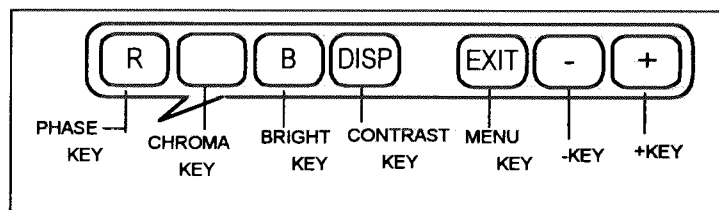


Fig. 7

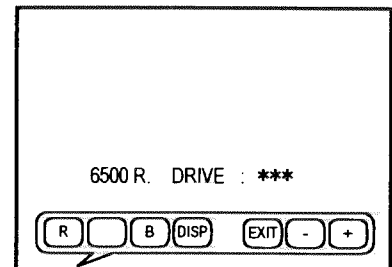


Fig. 8

[WHITE BALANCE Adjustment : METHOD 2]

Accordance with the screen, select the WHITE BALANCE mode that following below.

Press the +key or -key, then enter the WHITE BALANCE full adjustment mode as shown in Fig.9 (this mode both LOW LIGHT and HIGH LIGHT are able to adjust). In this case, key control is changed as shown below. The operation of this mode is as same as SIGNAL BLOCK adjustment operation.

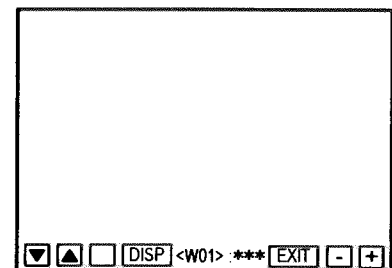
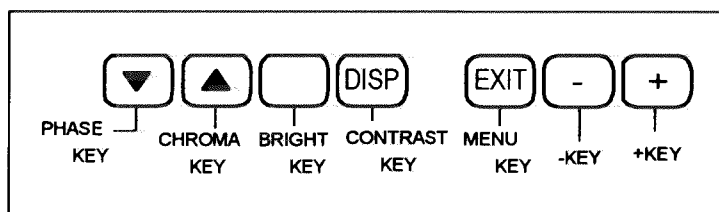


Fig. 9

■ DEFLECTION BLOCK

- ① Press the **BRIGHT** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).
- ② Then screen displays the DEFLECTION BLOCK adjustment screen (Fig.10).
- ③ The select item is shown by the SERVICE Number at the lower of the screen.
- ④ The adjustment screen changes by case of the signal that use for adjustment (Vertical frequency and screen aspect value).

SIGNAL		SCREEN DISPLAY
50Hz	4:3	<D0?>
60Hz	4:3	<DA?>
50Hz	16:9	<DB?>
60Hz	16:9	<DC?>

Key control operation are displays as same as the screen lower. The key operations of this mode are following as shown below.
CONTRAST key is the switch of the screen display. If necessary, you can shut off the display. Carefully, values of SERVICE MENU adjustment items are changed while shut off the screen display.

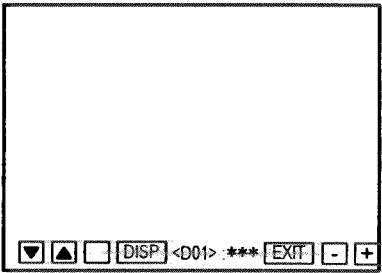
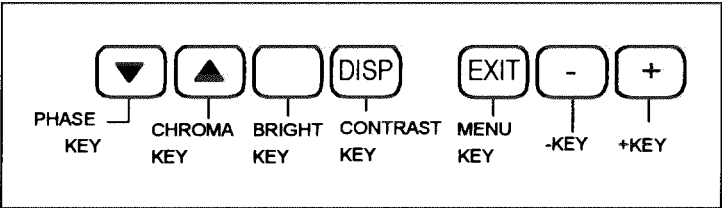


Fig. 10



■ CONTROL BLOCK (Don' t change the values, if not to necessary).

- ① Press the **CONTRAST** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).
- ② Then screen displays the CONTROL BLOCK adjustment screen (Fig.11)
- ③ The select item is shown by the SERVICE Number at the lower of the screen.
- ④ Key control operation are displays as same as the screen lower. The key operations of this mode are following as shown below.

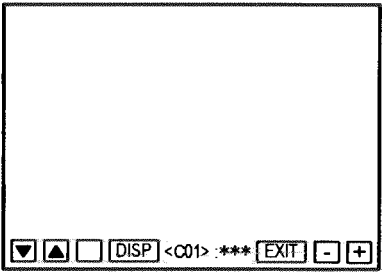
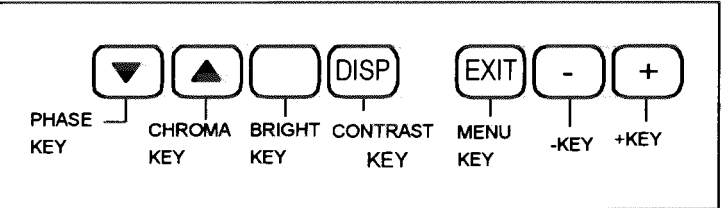
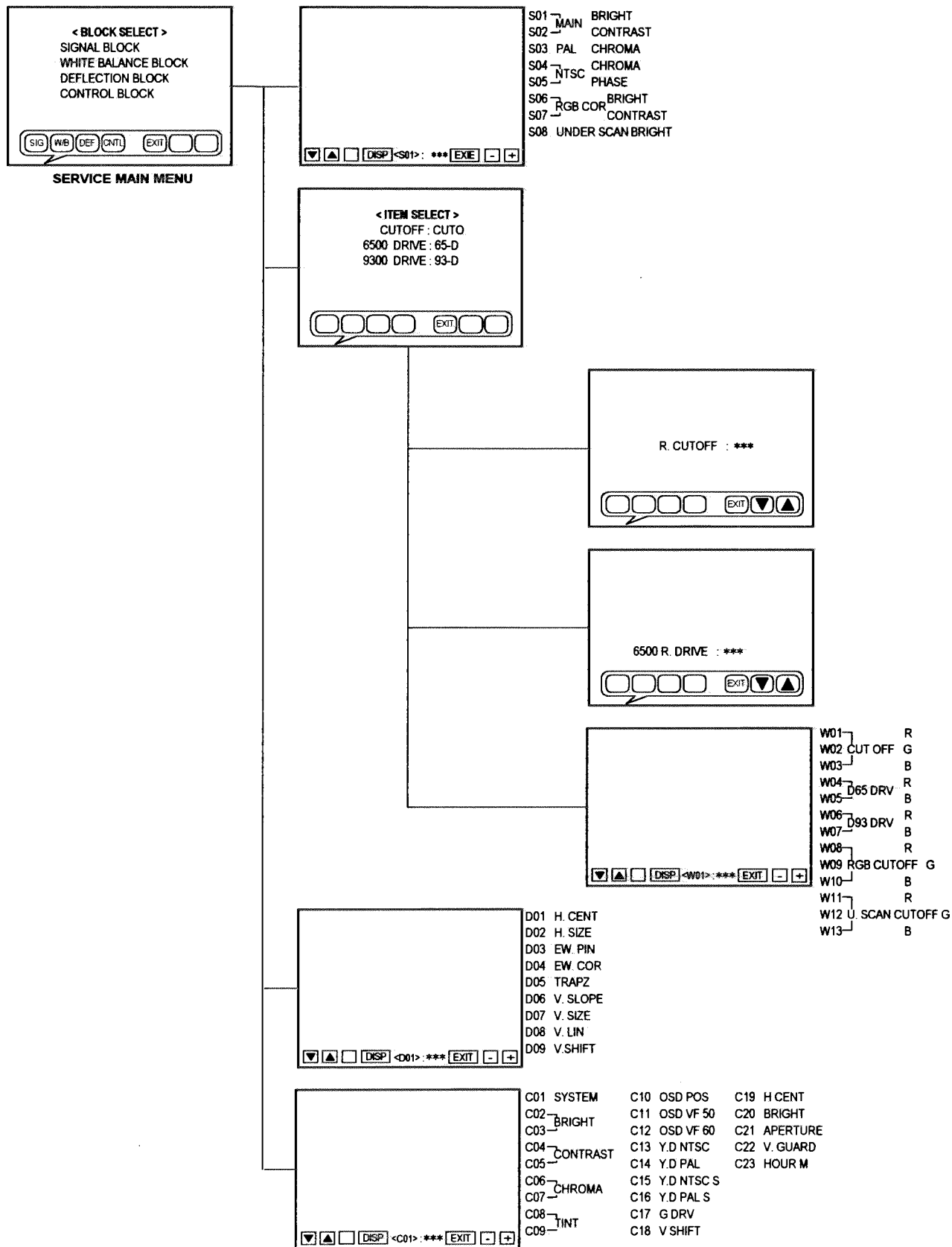


Fig. 11



■ INITIAL SETTINGS OF THE SERVICE MENU ADJUSTMENT ITEMS

1. SIGNAL BLOCK

SERVICE Number	ITEMS		VARIABLE RANGE	INITIAL VALUE	DESCRIPTION
S01	MAIN	BRIGHT	000 ~ 063	035	Avaliable
S02		CONTRAST	000 ~ 063	037	
S03	PAL	CHROMA	000 ~ 063	030	
S04	NTSC	CHROMA	000 ~ 063	029	
S05		PHASE	000 ~ 063	029	
S06	R.G.B CORRECT	BRIGHT	-128 ~ 000 ~ +127	000	
S07		CONTRAST	-128 ~ 000 ~ +127	000	
S08	UNDER SCAN	BRIGHT CORRECT	-128 ~ 000 ~ +127	000	

2. WHITE BALANCE BLOCK

SERVICE Number	ITEMS		VARIABLE RANGE	INITIAL VALUE	DESCRIPTION
W01	CUTOFF	R	000 ~ 127	010	Avaliable
W02		G	000 ~ 127	010	
W03		B	000 ~ 127	010	
W04	D65 DRIVE	R	000 ~ 063	041	
W05		B	000 ~ 063	022	
W06	D93 DRIVE	R	000 ~ 063	036	
W07		B	000 ~ 063	029	
W08	R.G.B CUTOFF CORRECT	R	-128 ~ 000 ~ +127	000	
W09		G	-128 ~ 000 ~ +127	000	
W10		B	-128 ~ 000 ~ +127	000	
W11	UNDER SCAN	R	-128 ~ 000 ~ +127	000	
W12	CUTOFF	G	-128 ~ 000 ~ +127	000	
W13	CORRECT	B	-128 ~ 000 ~ +127	000	

3. DEFLECTION BLOCK

SERVICE Number	ITEMS	VARIABLE RANGE	INITIAL VALUE	DESCRIPTION
D01	4 : 3 50Hz	HORIZONTAL CENTER	000 ~ 063	Avariable
D02		HORIZONTAL SIZE	000 ~ 063	
D03		EW-PIN CUSHION	000 ~ 063	Don't touch
D04		EW-CORRECTION	000 ~ 063	
D05		TRAPEZIUM	000 ~ 063	Avariable
D06		VERTICAL SLOPE	000 ~ 063	
D07		VERTICAL SIZE	000 ~ 063	Don't touch
D08		VERTICAL LINEARITY	000 ~ 063	
D09		VERTICAL SHIFT	000 ~ 063	Avariable
DA1	4 : 3 60Hz	HORIZONTAL CENTER	-128 ~ 000 ~ +127	Avariable
DA2		HORIZONTAL SIZE	-128 ~ 000 ~ +127	
DA3		EW-PIN CUSHION	-128 ~ 000 ~ +127	Don't touch
DA4		EW-CORRECTION	-128 ~ 000 ~ +127	
DA5		TRAPEZIUM	-128 ~ 000 ~ +127	Avariable
DA6		VERTICAL SLOPE	-128 ~ 000 ~ +127	
DA7		VERTICAL SIZE	-128 ~ 000 ~ +127	Don't touch
DA8		VERTICAL LINEARITY	-128 ~ 000 ~ +127	
DA9		VERTICAL SHIFT	-128 ~ 000 ~ +127	Avariable
DB1	16 : 9 50Hz	HORIZONTAL CENTER	-128 ~ 000 ~ +127	Reserved (Don't touch)
DB2		HORIZONTAL SIZE	-128 ~ 000 ~ +127	
DB3		EW-PIN CUSHION	-128 ~ 000 ~ +127	
DB4		EW-CORRECTION	-128 ~ 000 ~ +127	
DB5		TRAPEZIUM	-128 ~ 000 ~ +127	
DB6		VERTICAL SLOPE	-128 ~ 000 ~ +127	
DB7		VERTICAL SIZE	-128 ~ 000 ~ +127	
DB8		VERTICAL LINEARITY	-128 ~ 000 ~ +127	
DB9		VERTICAL SHIFT	-128 ~ 000 ~ +127	
DC1	16 : 9 60Hz	HORIZONTAL CENTER	-128 ~ 000 ~ +127	Reserved (Don't touch)
DC2		HORIZONTAL SIZE	-128 ~ 000 ~ +127	
DC3		EW-PIN CUSHION	-128 ~ 000 ~ +127	
DC4		EW-CORRECTION	-128 ~ 000 ~ +127	
DC5		TRAPEZIUM	-128 ~ 000 ~ +127	
DC6		VERTICAL SLOPE	-128 ~ 000 ~ +127	
DC7		VERTICAL SIZE	-128 ~ 000 ~ +127	
DC8		VERTICAL LINEARITY	-128 ~ 000 ~ +127	
DC9		VERTICAL SHIFT	-128 ~ 000 ~ +127	
DD1	UNDER SCAN	HORIZONTAL CENTER	-128 ~ 000 ~ +127	Reserve (Don't touch)
DD2		HORIZONTAL SIZE	-128 ~ 000 ~ +127	
DD3		EW-PIN CUSHION	-128 ~ 000 ~ +127	
DD4		EW-CORRECTION	-128 ~ 000 ~ +127	
DD5		TRAPEZIUM	-128 ~ 000 ~ +127	
DD6		VERTICAL SLOPE	-128 ~ 000 ~ +127	
DD7		VERTICAL SIZE	-128 ~ 000 ~ +127	
DD8		VERTICAL LINEARITY	-128 ~ 000 ~ +127	
DD9		VERTICAL SHIFT	-128 ~ 000 ~ +127	

SERVICE Number	ITEMS	VARIABLE RANGE	INITIAL VALUE	DESCRIPTION
DE1	UNDER SCAN 60Hz CORRECT	HORIZONTAL CENTER	-128 ~ 000 ~ +127	Reserve (Don't touch)
DE2		HORIZONTAL SIZE	-128 ~ 000 ~ +127	
DE3		EW-PIN CUSHION	-128 ~ 000 ~ +127	
DE4		EW-CORRECTION	-128 ~ 000 ~ +127	
DE5		TRAPEZIUM	-128 ~ 000 ~ +127	
DE6		VERTICAL SLOPE	-128 ~ 000 ~ +127	
DE7		VERTICAL SIZE	-128 ~ 000 ~ +127	
DE8		VERTICAL LINEARITY	-128 ~ 000 ~ +127	
DE9		VERTICAL SHIFT	-128 ~ 000 ~ +127	

4. CONTROL BLOCK

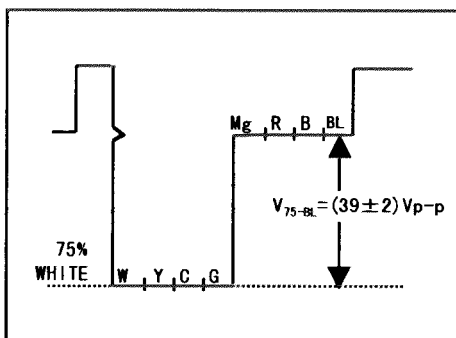
SERVICE Number	ITEM	VARIABLE RANGE	INITIAL VALUE	DESCRIPTION
C01	SYSTEM	000 ~ 011	002	Reserve (Don't touch)
C02	BRIGHT POINT	UP	000 ~ 063	
C03		DOWN	000 ~ 063	
C04	CONTRAST POINT	UP	000 ~ 063	
C05		DOWN	000 ~ 063	
C06	CHROMA POINT	UP	000 ~ 063	
C07		DOWN	000 ~ 063	
C08	TINT POINT	UP	000 ~ 063	
C09		DOWN	000 ~ 063	
C10	OSD POSITION	000 ~ 010	002	
C11	OSD VERTICAL FREQUENCY 50Hz	000 ~ 010	006	
C12	OSD VERTICAL FREQUENCY 60Hz	000 ~ 010	000	
C13	Y DELAY NTSC VIDEO	000 ~ 015	001	
C14	Y DELAY PAL VIDEO	000 ~ 015	005	
C15	Y DELAY NTSC S VIDEO	000 ~ 015	005	
C16	Y DELAY PAL S VIDEO	000 ~ 015	007	
C17	G DRIVE	000 ~ 063	031	
C18	VERTICAL SHIFT RGB	-128 ~ 000 ~ +127	000	
C19	HORIZONTAL CENTER RGB	-128 ~ 000 ~ +127	000	
C20	BRIGHT SERVICE	000 ~ 063	031	
C21	APERTURE CENTER	000 ~ 015	006	
C22	VERTICAL GUARD	000 ~ 001	001	
C23	HOOR METER	001 ~	001	



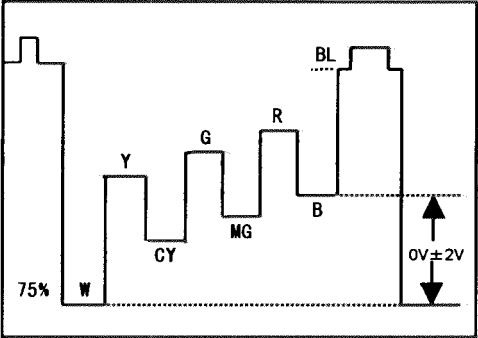


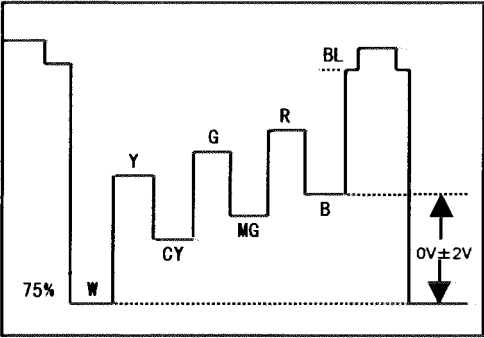


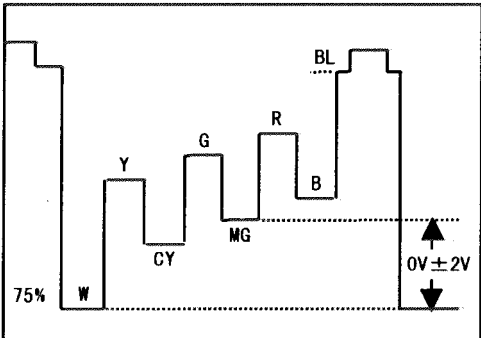
■ ADJUSTMENT

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
B1 power supply adjustment	Voltmeter Variable transformer	TP-91(B1): S1 ① pin TP-E(GND): S1 ⑤ pin [MAIN PWB] SCREEN VR [In FBT]	B1 adjust VR [MAIN PWB]	<ol style="list-style-type: none"> 1. Set power supply voltage to 230V. 2. Select WHITE BALANCE BLOCK mode. 3. Select CUTOFF adjustment mode (LOW LIGHT mode). 4. Press "SERV" switch as CONTRAST key, to display the horizontal line. 5. Adjust the SCREEN VR to disappear the horizontal line. 6. Adjust B1 adjust VR to set the B1 voltage to 53V $\pm 0.2V$. 7. Readjust the SCREEN VR to appear the horizontal line faintly, and cancel the horizontal line to press the "SERV" switch.
High voltage check	High voltage meter Signal generator (All-black signal)	CRT Anode SCREEN VR [In FBT]		<ol style="list-style-type: none"> 1. Set power supply voltage to 230V. 2. Select WHITE BALANCE BLOCK mode. 3. Select CUTOFF adjustment mode (LOW LIGHT mode). 4. Press "SERV" switch as CONTRAST key, to display the horizontal line. 5. Adjust the SCREEN VR to disappear the horizontal line. 6. Connect the high voltage meter to the CRT anode and check for 23.8~26.2kV. 7. Readjust the SCREEN VR to appear the horizontal line faintly, and cancel the horizontal line to press the "SERV" switch.
Focus adjustment	Signal generator (Resolution pattern)	FOCUS VR [Upper knob : In FBT]		<ol style="list-style-type: none"> 1. Adjust the Focus VR for optimum focus where moire is not apparent. 2. Darken the picture and adjust the focus by tuning counter-clockwise from the position where focus is poor. 3. Alternately repeat the above steps to obtain the optimum position. <p>● Focus can be adjusted easily by displaying the menu.</p>

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
White balance (Low Light) adjustment	Signal generator (Resolution pattern, Colour bar Pattern)	SCREEN VR [Lower knob : In FBT]	W01 R CUTOFF W02 G CUTOFF W03 B CUTOFF [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply the resolution pattern. 2. Select the WHITE BALANCE BLOCK from the SERVICE MAIN MENU. 3. Select the CUTOFF mode. 4. Press "SERV" switch as CONTRAST key, to display the horizontal line. Carefully adjust the SCREEN VR to horizontal line appears faintly, not to shine it much. 5. Confirm the values of the R.G.B CUTOFF are the 30. 6. Gradually turn the SCREEN VR from the left to the right direction to bring one of the red, green and blue colours faintly visible. 7. Then select the CUTOFF switch (R, G or B) that colour except for appears first, and adjusting 2 colours CUTOFF values by pressing the +key, and make horizontal line visible white. 8. Readjust the SCREEN VR to appear the horizontal line faintly, and cancel the horizontal line to press the "SERV" switch.
White balance (Hight Light) 6500K	Signal generator (Resolution pattern) Colour Analyzer or Colour temperature meter		W04 R DRIVE 6500 W05 B DRIVE 6500 [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply the resolution pattern. 2. Select the WHITE BALANCE BLOCK from the SERVICE MAIN MENU. 3. Select the 65-D mode (High light 6500 mode). 4. Apply the sensor of the Colour temperature meter to the CRT surface, part of the 100% white, adjust the R drive or B drive to setting 6500K ($x=0.313$, $y=0.329$). 5. Exit the SERVICE MENU by pressing the MENU key. 6. Check the white balance tracking is optimum when CONTRAST and BRIGHT are up and down.
White balance (High Light) 9300K	Signal generator (Resolution pattern) Colour Analyzer or Colour temperature meter		W06 R DRIVE 9300 W07 B DRIVE 9300 [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply the resolution pattern. 2. Select the WHITE BALANCE BLOCK from the SERVICE MAIN MENU. 3. Select the 93-D mode (High light 9300 mode). 4. Apply the sensor of the Colour temperature meter to the CRT surface, part of the 100% white, adjust the R drive or B drive to setting 9300K ($x=0.283$, $y=0.297$). 5. Exit the SERVICE MENU by pressing the MENU key. 6. Check the white balance tracking is optimum when CONTRAST and BRIGHT are up and down.

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Bright adjustment	Signal generator (Sprit colour bar)		S01 (BRIGHT) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a sprit colour bar signal. 2. Select the SIGNAL BLOCK from the SERVICE MAIN MENU. 3. Select the S01 item. 4. Adjust S01 to where the sprit colour bar 0% black component faintly brightens. 5. Check it to on and off the screen display by turning the "DISP" switch.
Contrast adjustment	Signal generator (Colour bar) Oscillo-scope	TP-47G TP-E(↗) [CRT SOCKET PWB]	S02 (CONTRAST) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a full colour bar signal. (75 / 0 / 75 / 0) 2. Connect the oscillo-scope probe to TP-47G and TP-E(↗). 3. Select the SIGNAL BLOCK from SERVICE MAIN MENU. 4. Select the S02 item. 5. Adjust S02 to set the waveform level to (39 ± 2) Vp-p as shown in figure.



Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
PAL CHROMA adjustment	Signal generator (Colour bar) Oscillo-scope	TP-47B TP-E() [CRT SOCKET PWB]	S03 (PAL CHROMA) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a PAL colour bar signal. 2. Connect the oscillo-scope probe to TP-47B and TP-E(). 3. Select the SIGNAL BLOCK from SERVICE MAIN MENU. 4. Select the S03 item. 5. Adjust the S03 to take the level difference in waveform is $0V \pm 2V$ as shown in figure.
				
NTSC CHROMA adjustment	Signal generator (Color bar) Oscillo-scope	TP-47B TP-E() [CRT SOCKET PWB]	S04 (NTSC CHROMA) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a NTSC 3.58 colour bar signal. 2. Connect the oscillo-scope probe to TP-47B and TP-E(). 3. Select the SIGNAL BLOCK from SERVICE MAIN MENU. 4. Select the S04 item. 5. Adjust the S04 to take the level difference in waveform is $0V \pm 2V$ as shown in figure.
				
NTSC PHASE adjustment	Signal generator (Colour bar) Oscillo-scope	TP-47B TP-E() [CRT SOCKET PWB]	S05 (NTSC PHASE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a NTSC 3.58 colour bar signal. 2. Connect the oscillo-scope probe to TP-47B and TP-E(). 3. Select the SIGNAL BLOCK from SERVICE MAIN MENU. 4. Select the S05 item. 5. Adjust the S05 to take the level difference in waveform is $0V \pm 2V$ as shown in figure.
				

DEFLECTION CIRCUIT ADJUSTMENT

There are 4 modes of DEFLECTION ADJUSTMENT depending upon the kind of input signals.

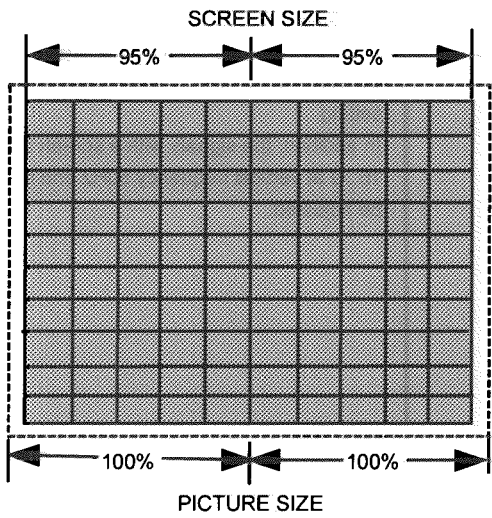
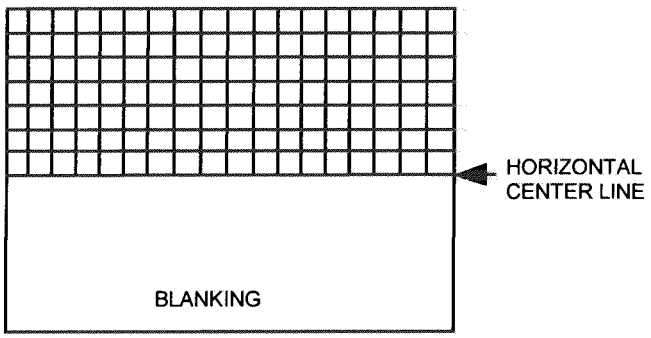
The adjustments must always be carried out in regular sequence given below.

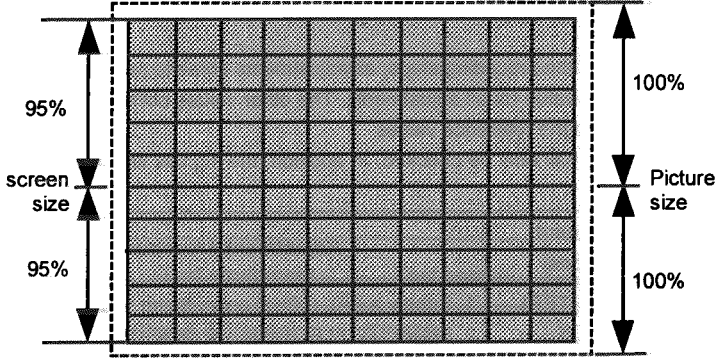
- ① ASPECT RATIO 4 : 3 VERTICAL FREQUENCY 50Hz
- ② ASPECT RATIO 4 : 3 VERTICAL FREQUENCY 60Hz
- ③ ASPECT RATIO 16 : 9 VERTICAL FREQUENCY 50Hz
- ④ ASPECT RATIO 16 : 9 VERTICAL FREQUENCY 60Hz

If you change the figures in the course of the adjustments by returning to the preceding steps, all adjustments come to nothing.

The screen aspect ratio 4 : 3 at 50Hz (PAL) is regarded as the reference value for all adjustments. The other values obtained in the adjustments using other signals become the off-set values as opposed to the reference values.

The signals with a screen aspect ratio 4 : 3 at vertical frequency 60Hz shall only be checked. In addition, the signals with a screen aspect ratio 16 : 9 at vertical frequency 50Hz and 60Hz shall not be adjusted.

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
H.CENTER H.SIZE adjustment	Signal generator (Cross-hatch pattern)		D01 (H.CENTER) D02 (H.SIZE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a PAL (50Hz) cross hatch signal. 2. Select DEFLECTION BLOCK from SERVICE MAIN MENU. 3. Select D01 item. 4. Adjust D01 to align the picture center with the CRT center. 5. Adjust D02 to set horizontal size to 95%. 6. Repeat above step 4 and 5 to adjust correctly.
				
V.SLOPE adjustment	Signal generator (Cross-hatch pattern)		D06 (V.SLOPE) [SERVICE MENU]	<ol style="list-style-type: none"> 7. Select D06 item, screen shows BLANKING ZONE automatically. 8. Adjust D06 to cross-hatch center and border line of BLANKING ZONE agreement.
				

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
V.SHIFT V.SIZE adjustment	Signal generator (Cross-hatch pattern)		D09 (V.SHIFT) D07 (V.SIZE) [SERVICE MENU]	9. Select D09 item. 10. djust D09 to align the picture center in vertical direction with the CRT center. 11. Adjust D07 to set vertical size to 95%.
				
				<p>Make sure that the adjustments is properly done on the screen of 60Hz 4:3, 50Hz 16:9 and 60Hz 16:9. If screen of the deflection adjustment is not optimum in 60Hz 4 : 3 mode, adjust the deflection setting.</p> <p>In addition, the signals with a screen aspect ratio 16 : 9 at vertical frequency 50Hz and 60Hz shall not be adjusted.</p>

PURITY, CONVERGENCE

PURITY ADJUSTMENT

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig.3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.

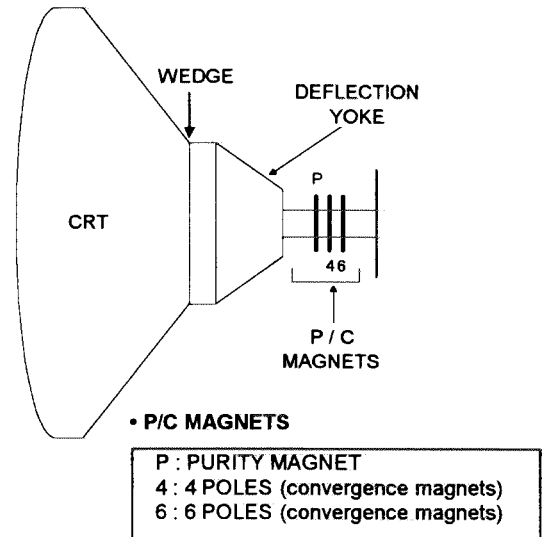


Fig.1

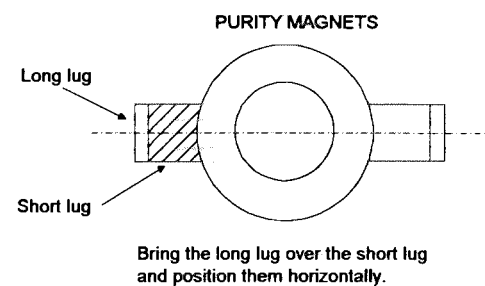


Fig.2

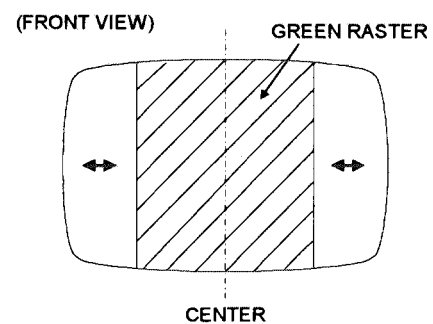


Fig.3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig.1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta(red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

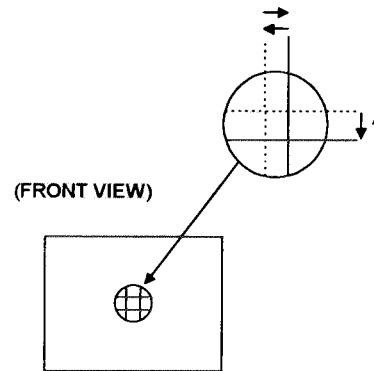


Fig.1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

(FRONT VIEW)

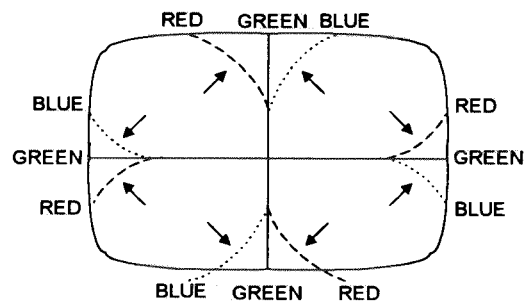


Fig.2

(FRONT VIEW)

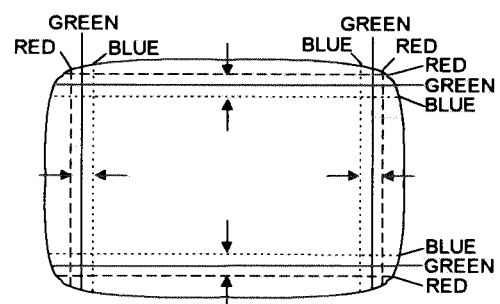


Fig.3

- After adjustment, fix the wedge at the original position.
Fasten the retainer screw of the deflection yoke.
Fix the 6 magnets with glue.

SELF DIAGNOSIS FUNCTION

1.OUTLINE

This model includes a SELF DIAGNOSIS FUNCTION that checks the circuit operating status and in event of malfunction, displays and stores the data in a memory. The data are stored in an I²C memory.

Fault detection starts with the I²C bus and is performed according to the input states of the control lines connected to the MAIN CPU.

2.USAGE

SELF DIAGNOSIS FUNCTION mode entry

- (1) While press the **MENU** key and **CHROMA** key simultaneously, and push the MAIN POWER switch on.
- (2) Then displays the SELF DIAGNOSIS FUNCTION screen. The screen indicates as shown in the table and the SELF DIAGNOSIS FUNCTION mode is entered. If in event a malfunction at RASTER not display, at this time POWER LED flashes.

PROTECTOR	
B1	: ○
X-RAY	: ○
BUS	
MEMORY	: ×2
TV-PRO	: ○
AV-SW	: ○

CAUSE	LED FLASHING CYCLE
X-RAY PROTECTOR	0.1 sec on / 0.1 sec off cycles
OVER CURRENT PROTECTOR	1.0 sec on / 1.0 sec off cycles

SELF DIAGNOSIS FUNCTION mode release

Turn the power switch to off or disconnect the power cord from AC outlet.

In this way, not to clear the error counts.

Reset the error count

While entered in this mode, press the **MENU** key **BRIGHT** key and simultaneously. Then clear the error count of the each item.

Fault history

The fault history counts up to a maximum of 9 times for each item. If the number of times exceeds 9, the display remains at 9. The fault history remains stored in the memory until deleted.

CONTENTS

CHECK ITEM	DISPLAY	DETECTION CONTENTS
POWER DEF CIRCUIT	B1 X-RAY	Over current protector operation and over voltage protector operation.
MEMORY IC AND DATA	MEMORY	Normal memory IC read / write operation
SINGLE CHIP TV PROCESSOR	TV-PRO	Normal IC101 (IF/DET/V/C/DEF) operation
INPUT SIGNAL AND SWITCHS	AV-SW	Normal signal switch IC (I/O) operation

TM-1700PN-S

TM-1700PN-S STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the Δ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2. SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1) Input signal : PAL Colour bar signal
 - (2) Setting positions of each knob/button and variable resistor : Original setting position when shipped
 - (3) Internal resistance of tester : DC 20k Ω / V
 - (4) Oscilloscope sweeping time : H \Rightarrow 20 μ S/div
: V \Rightarrow 5mS/div
: Others \Rightarrow Sweeping time is specified
 - (5) Voltage values : All DC voltage values
- * Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3. INDICATION OF PARTS SYMBOL [EXAMPLE]

- In the PW board : R1209 \rightarrow R209

4. INDICATIONS ON THE CIRCUIT DIAGRAM

(1) Resistors

● Resistance value

- No unit : [Ω]
- K : [K Ω]
- M : [M Ω]

● Rated allowable power

- No indication : 1/4[W]
- Others : As specified

● Type

- No indication : Carbon resistor
- OMR : Oxide metal film resistor
- MFR : Metal film resistor
- MPR : Metal plate resistor
- UNFR : Uninflamable resistor
- FR : Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2) Capacitors

● Capacitance value

- 1 or higher : [pF]
- less than 1 : [μ F]

● Withstand voltage

- No indication : DC50[V]
- Others : DC withstand voltage [V]
- AC indicated : AC withstand voltage [V]

* Electrolytic Capacitors

47/50[Example]: Capacitance value [μ F]/withstand voltage[V]




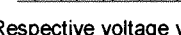
● Type

- No indication : Ceramic capacitor
- MY : Mylar capacitor
- MM : Metalized mylar capacitor
- PP : Polypropylene capacitor
- MPP : Metalized polypropylene capacitor
- MF : Metalized film capacitor
- TF : Thin film capacitor
- BP : Bipolar electrolytic capacitor
- TAN : Tantalum capacitor

(3) Coils



- No unit : [μ H]
- Others : As specified

(4) Power Supply

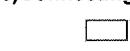
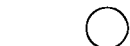
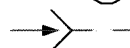
-  : B1
-  : B2
-  : 8V
-  : 5V

* Respective voltage values are indicated





(5) Test point

-  : Test point
-  : Only test point display

(6) Connecting method

-  : Connector
-  : Wrapping or soldering
-  : Receptacle

(7) Ground symbol

-  : LIVE side ground
-  : ISOLATED(NEUTRAL) side ground
-  : EARTH ground
-  : DIGITAL ground

5. NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (\perp) side GND and the ISOLATED(NEUTRAL) : (\perp) side GND. Therefore, care must be taken for the following points.

- (1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2) Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

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SEMICONDUCTOR SHAPES

TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR

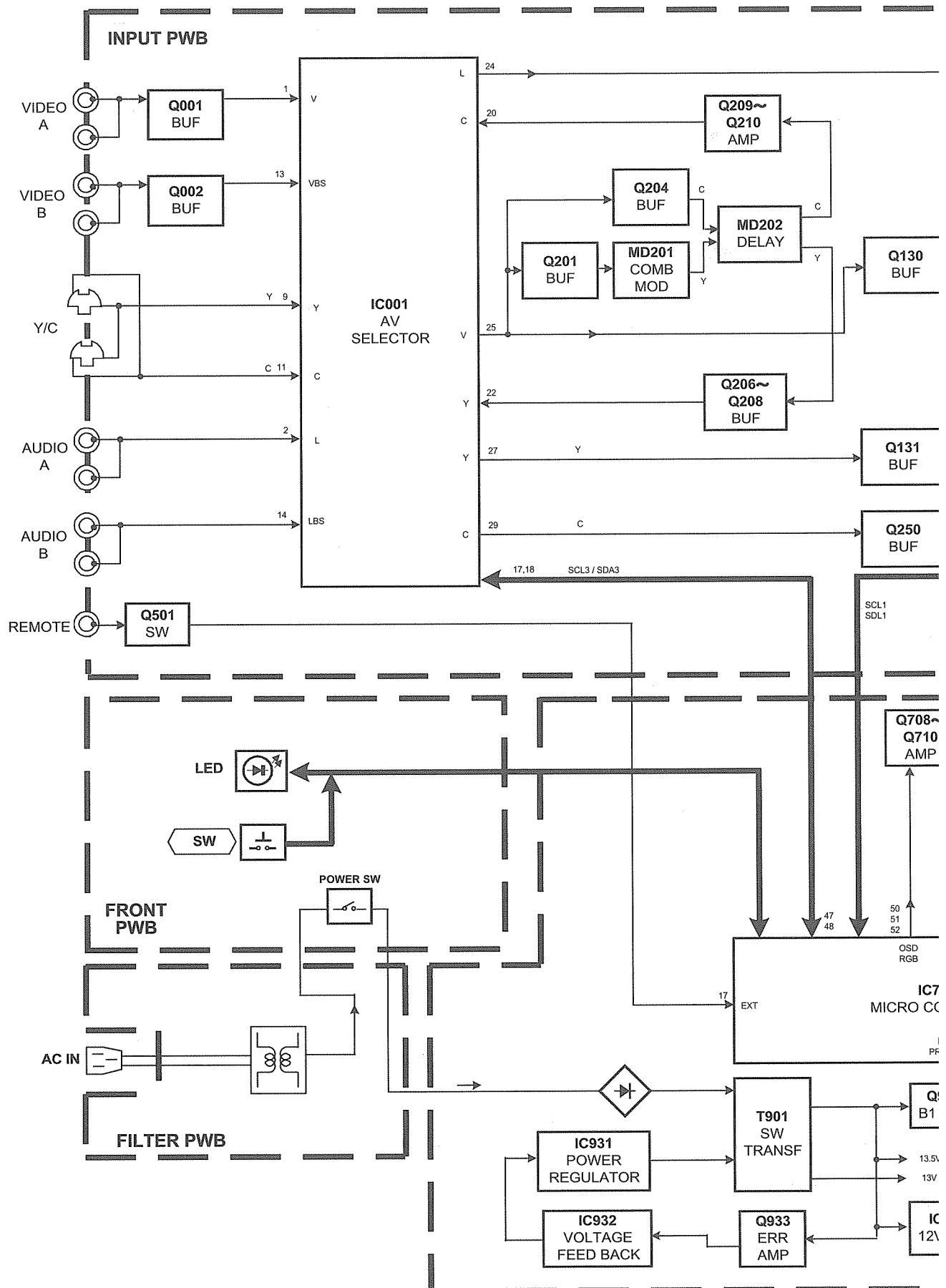
IC

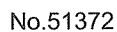
BOTTOM VIEW	FRONT VIEW			TOP VIEW

CHIP IC

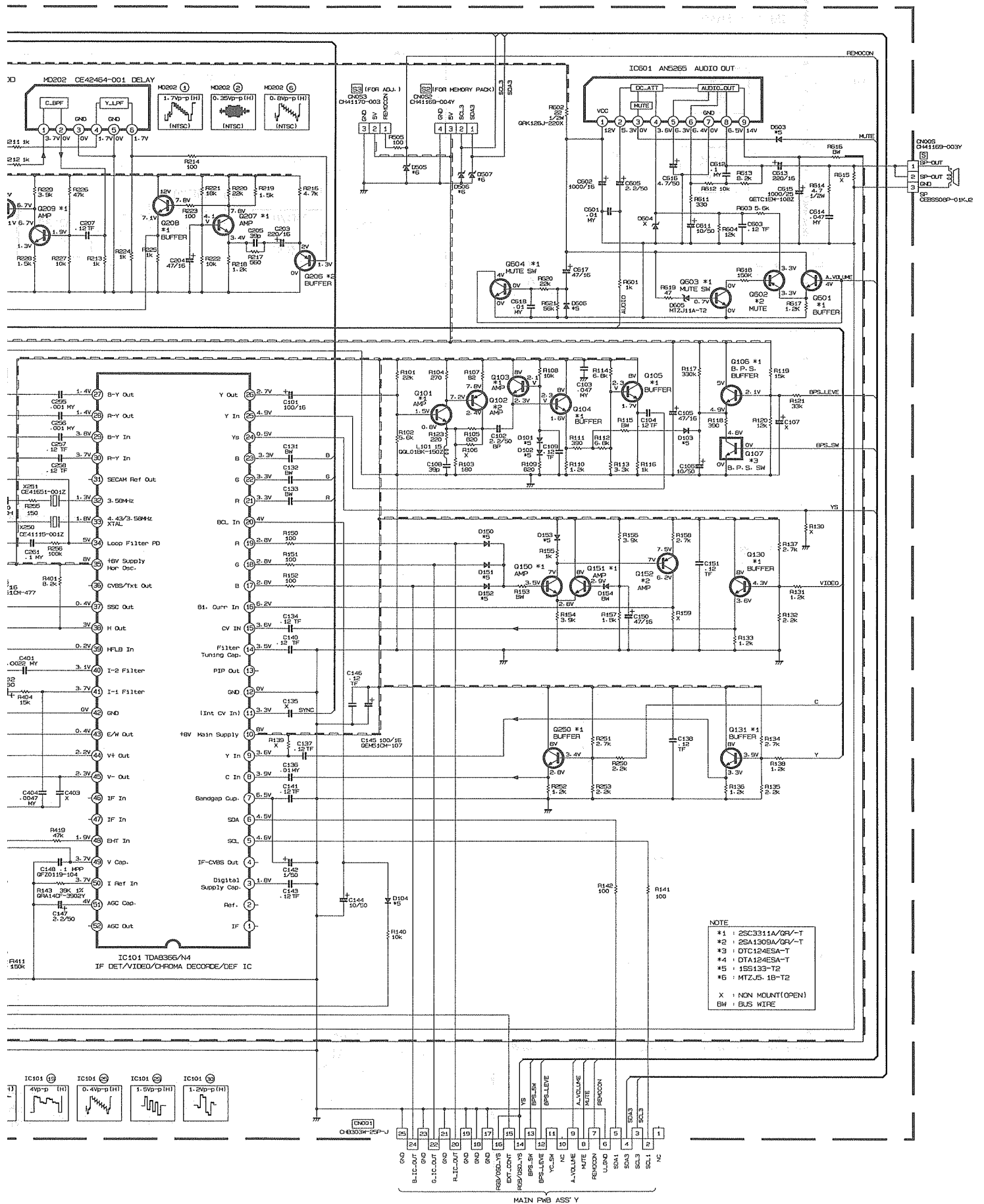
TOP VIEW		

BLOCK DIAGRAM

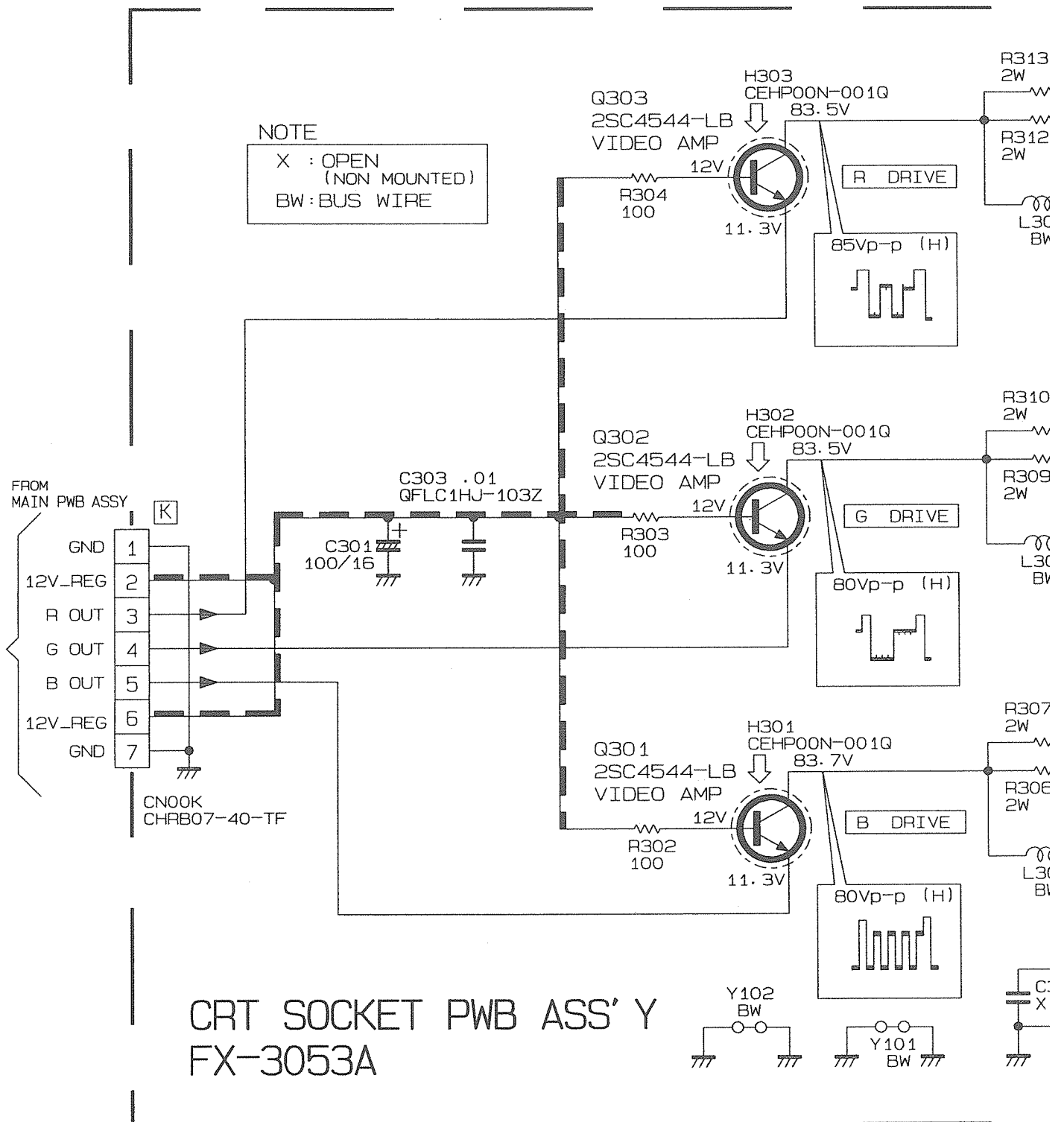


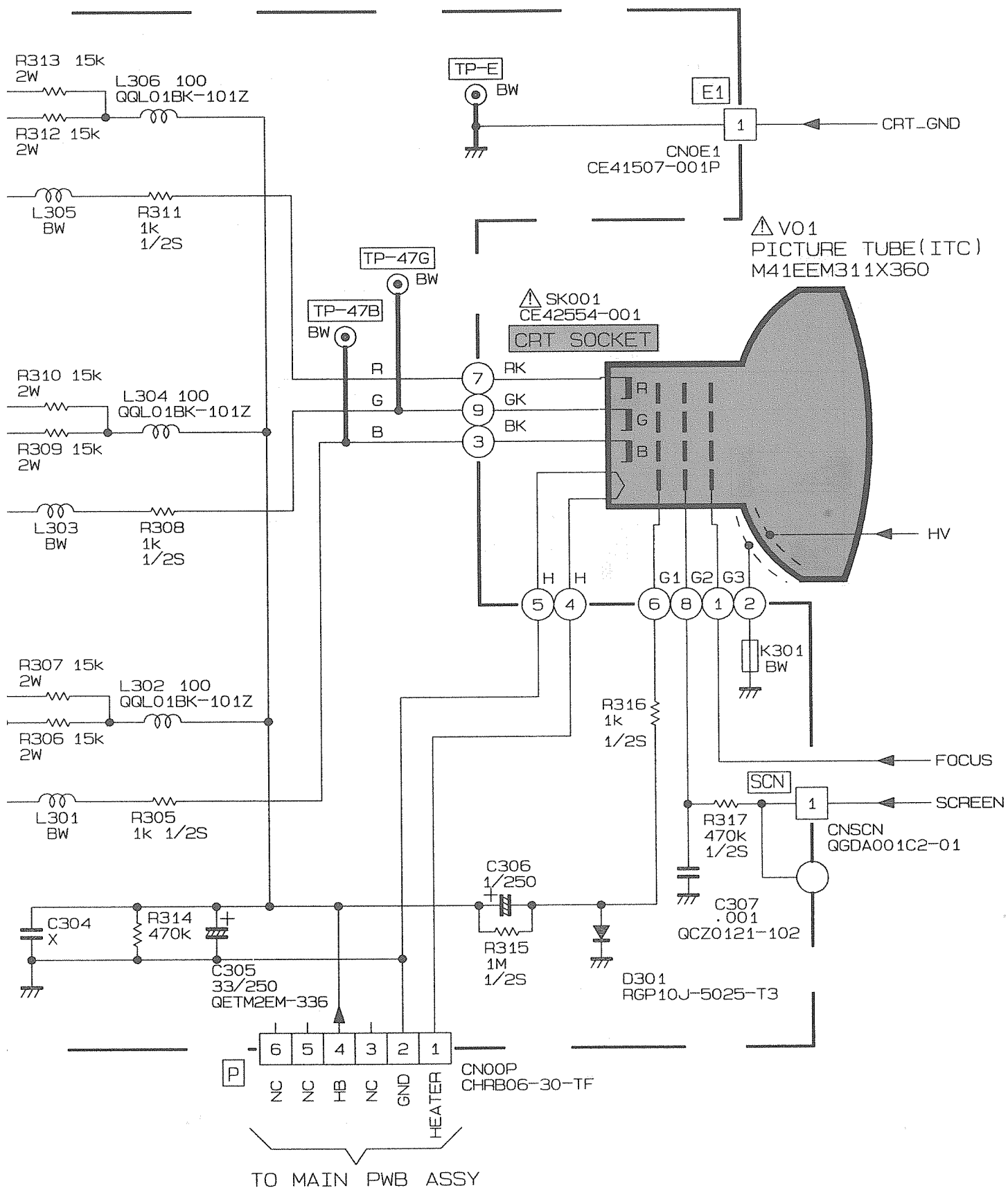




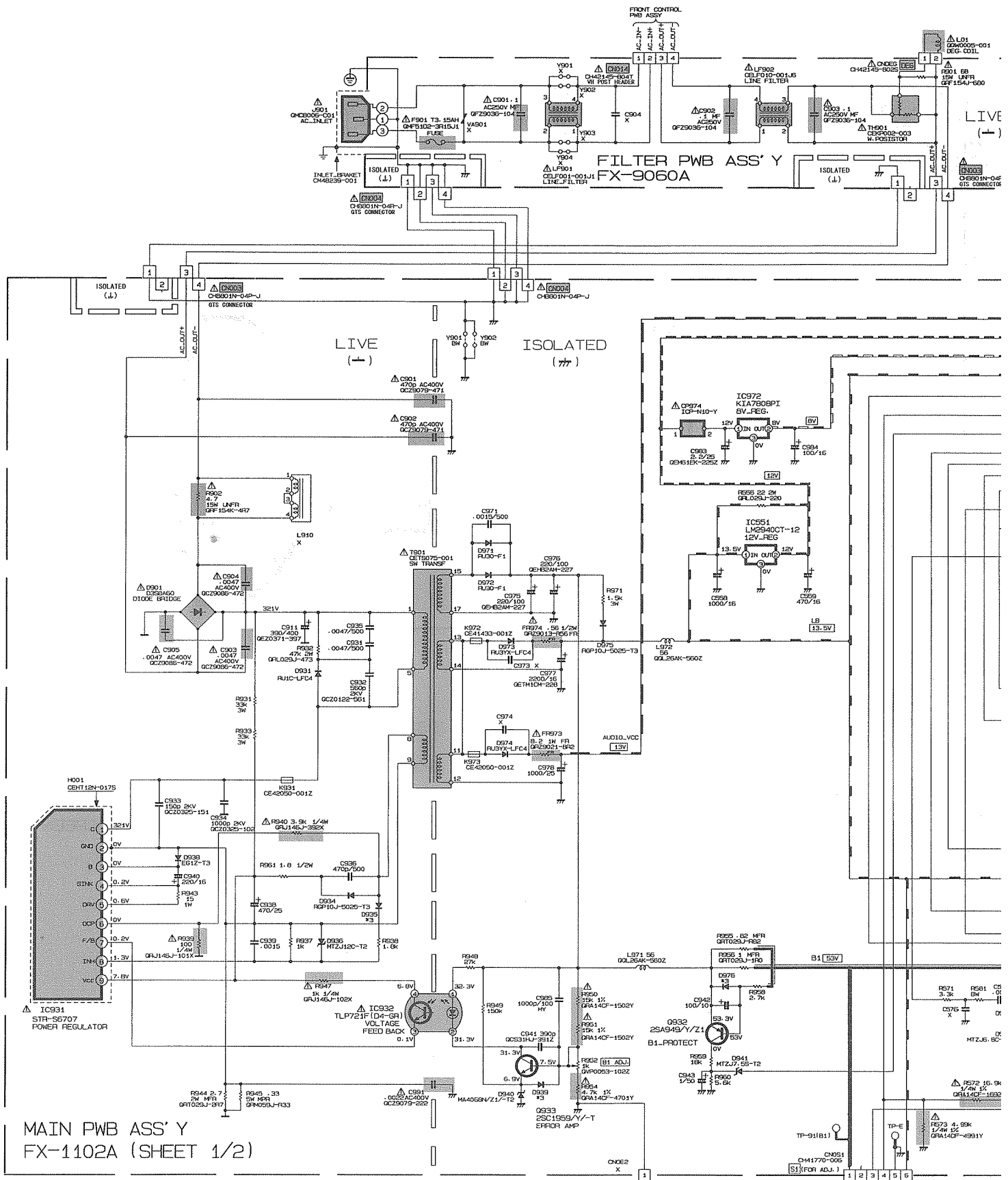


CRT SOCKET PWB CIRCUIT DIAGRAM





MAIN PWB AND FILTER PWB CIRCUIT DIAGRAM



LIVE
(-)

Q18901N-04R-J
QTS CONNECTOR

NOTE

- ```

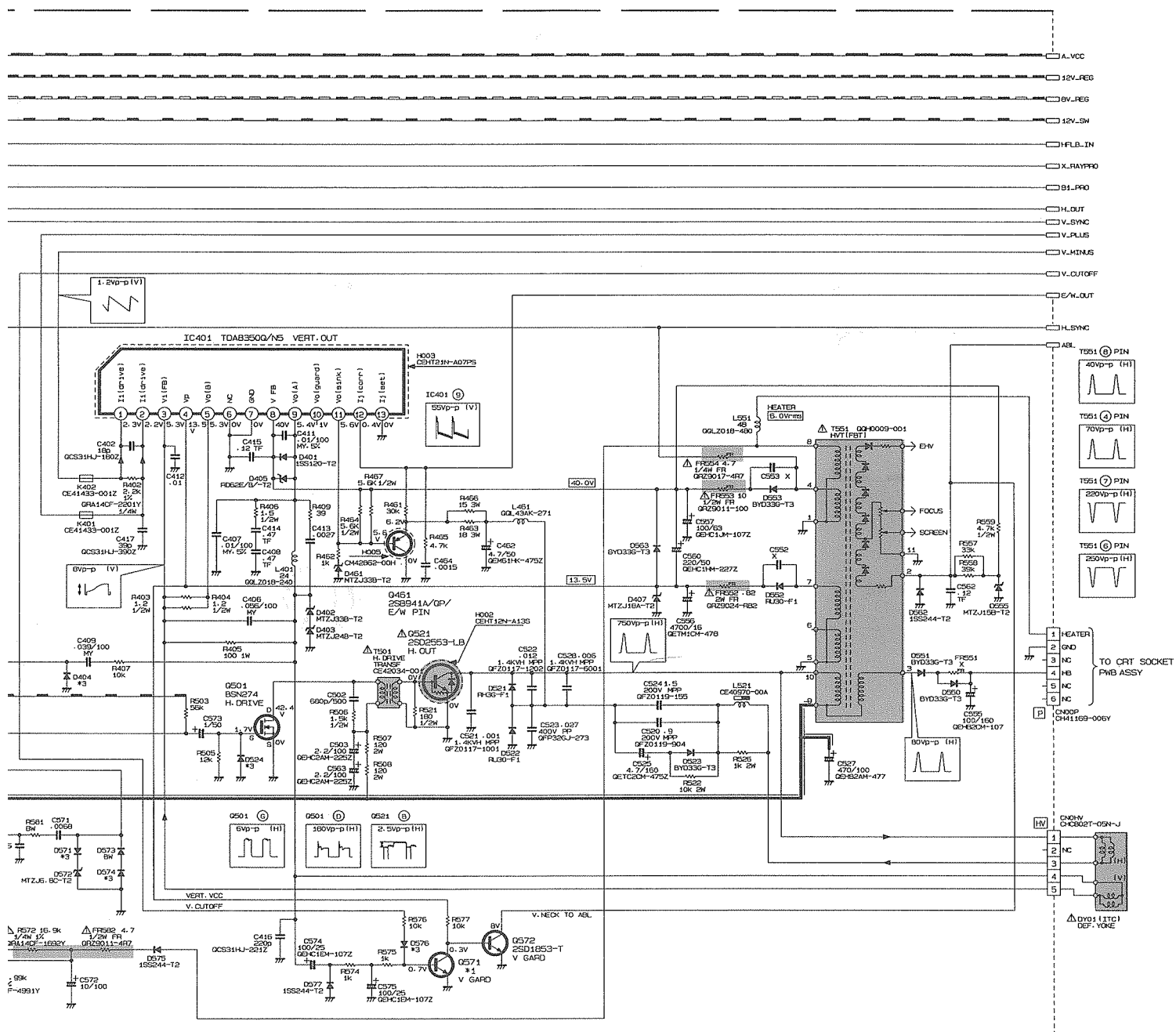
#1 : 2SC1740S/QR/-T
#2 : 2SA933S/QR/-T
#3 : 1SS133-T2
#4 : DTA114TS-T
#5 : DTC114TS-T

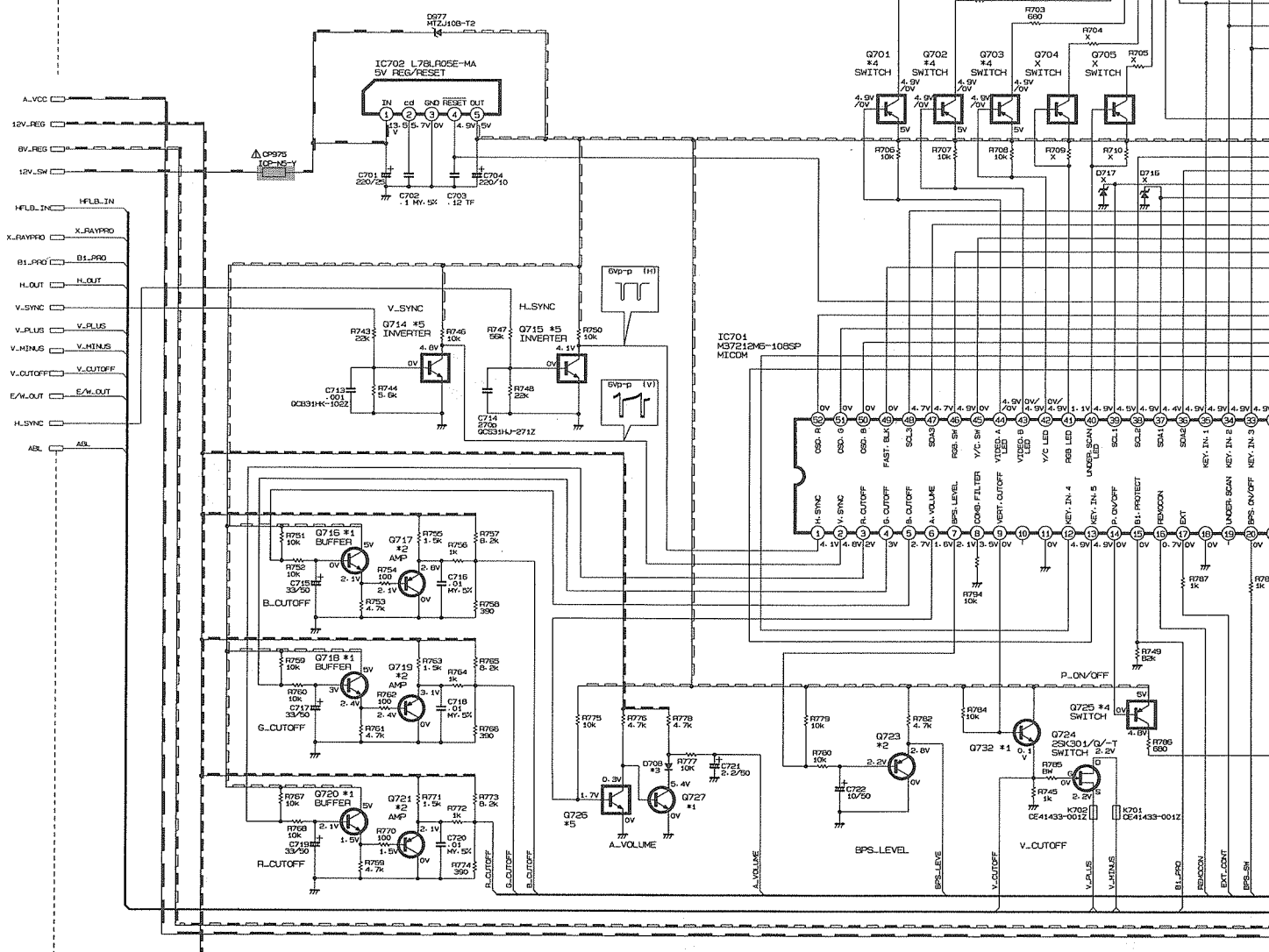
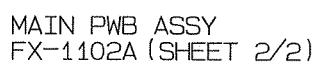
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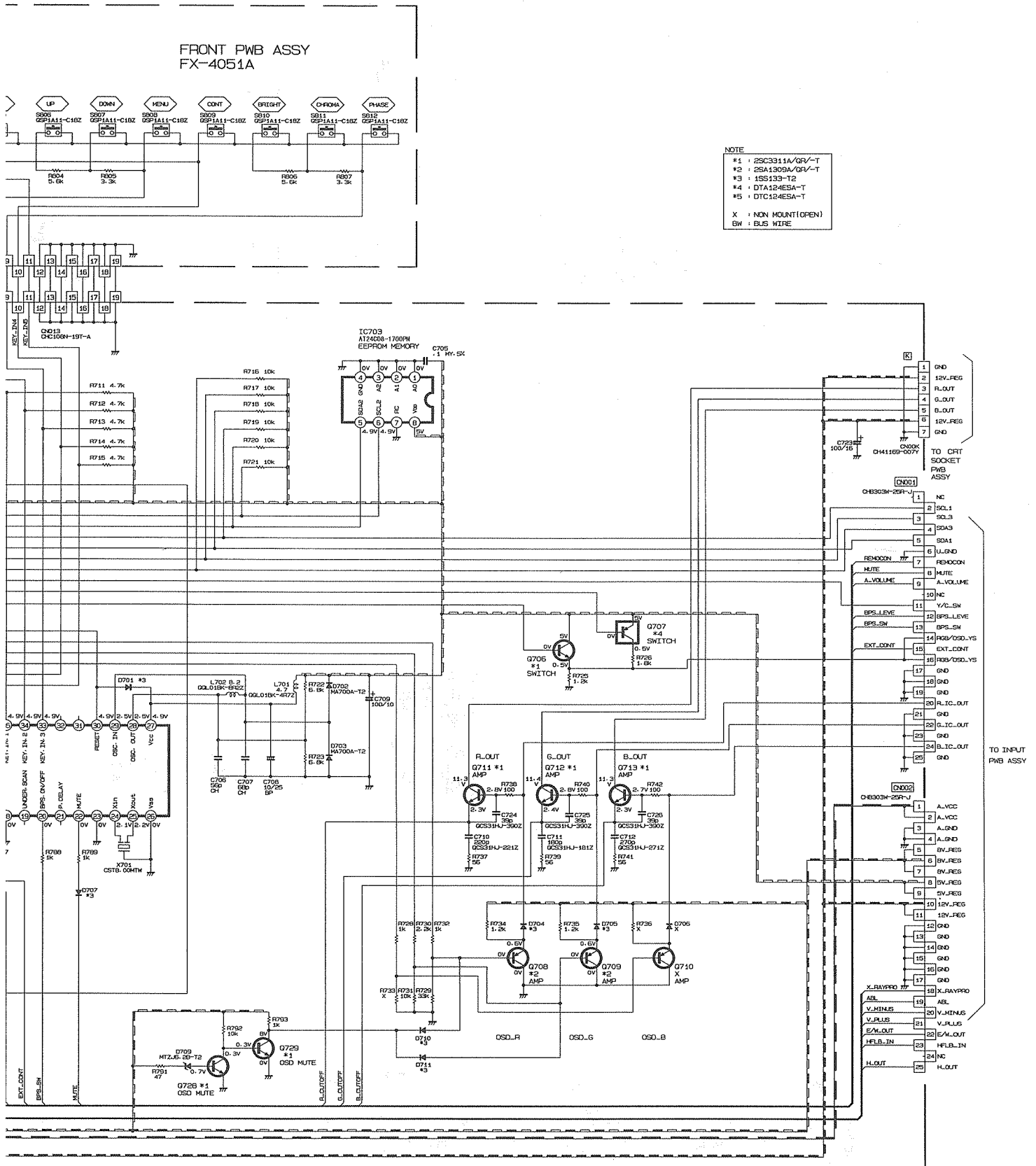
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X : NON MOUNT(OPEN)
BW : BUS WIRE

```

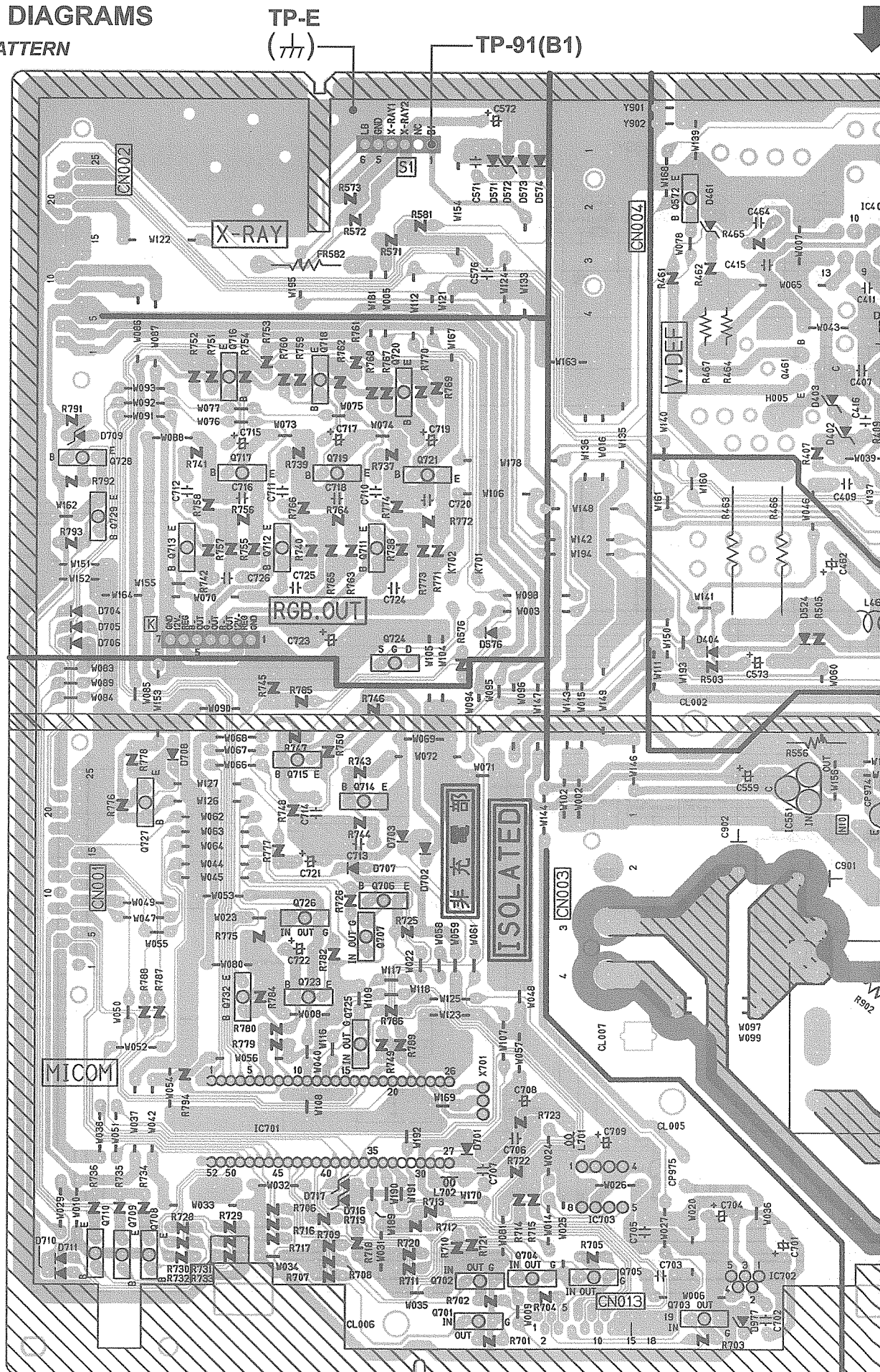




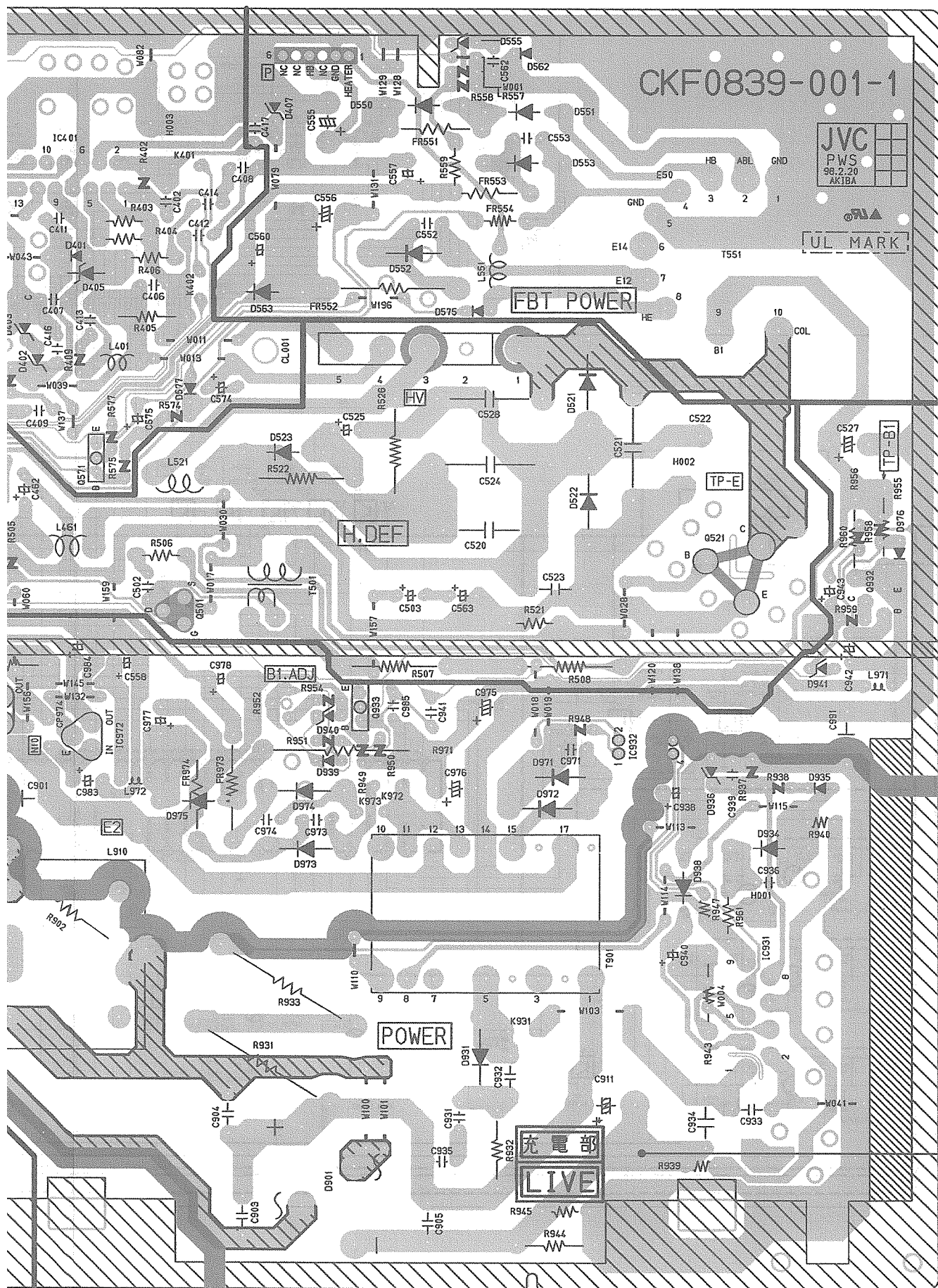


## PATTERN DIAGRAMS

## MAIN PWB PATTERN

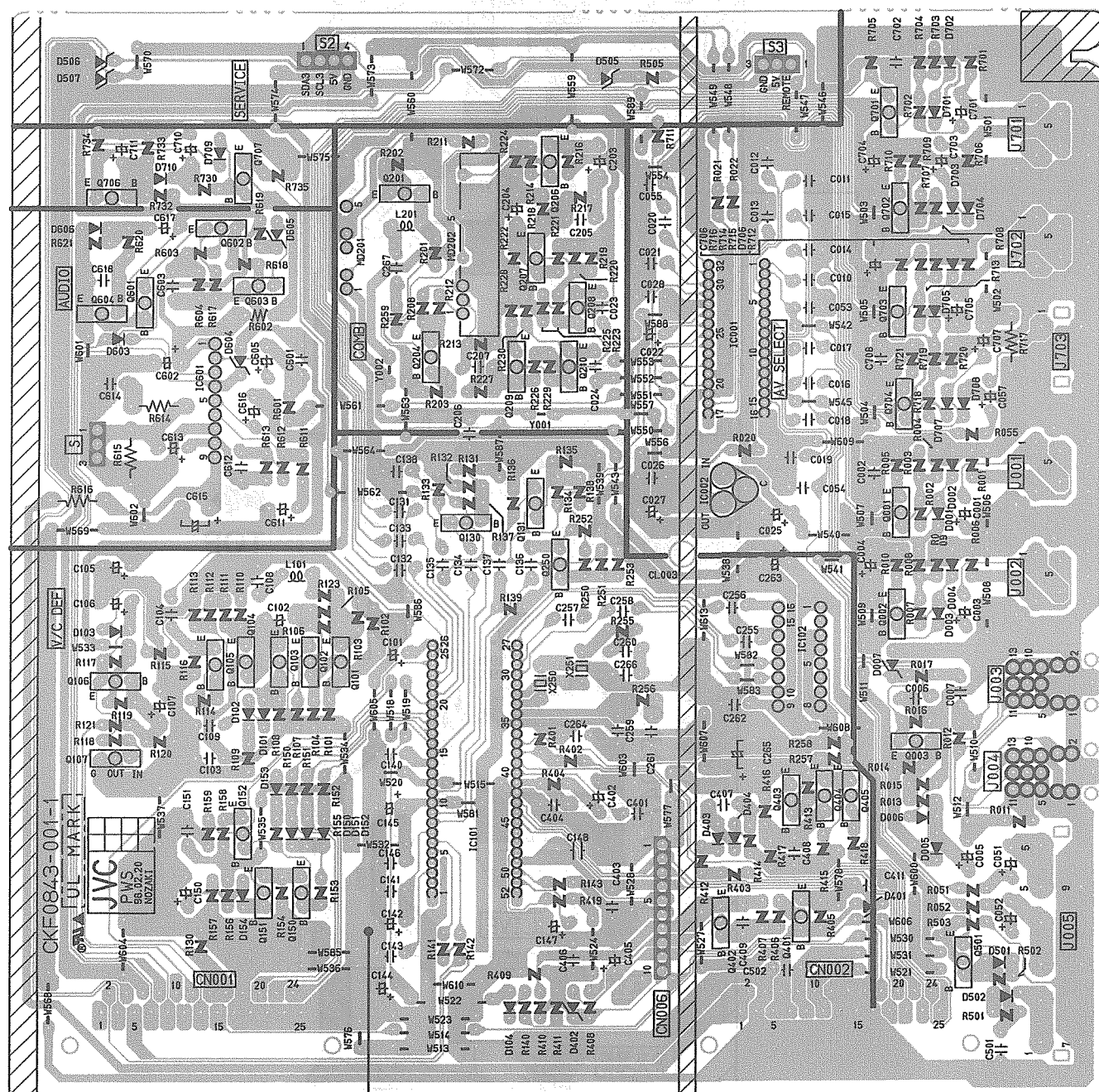






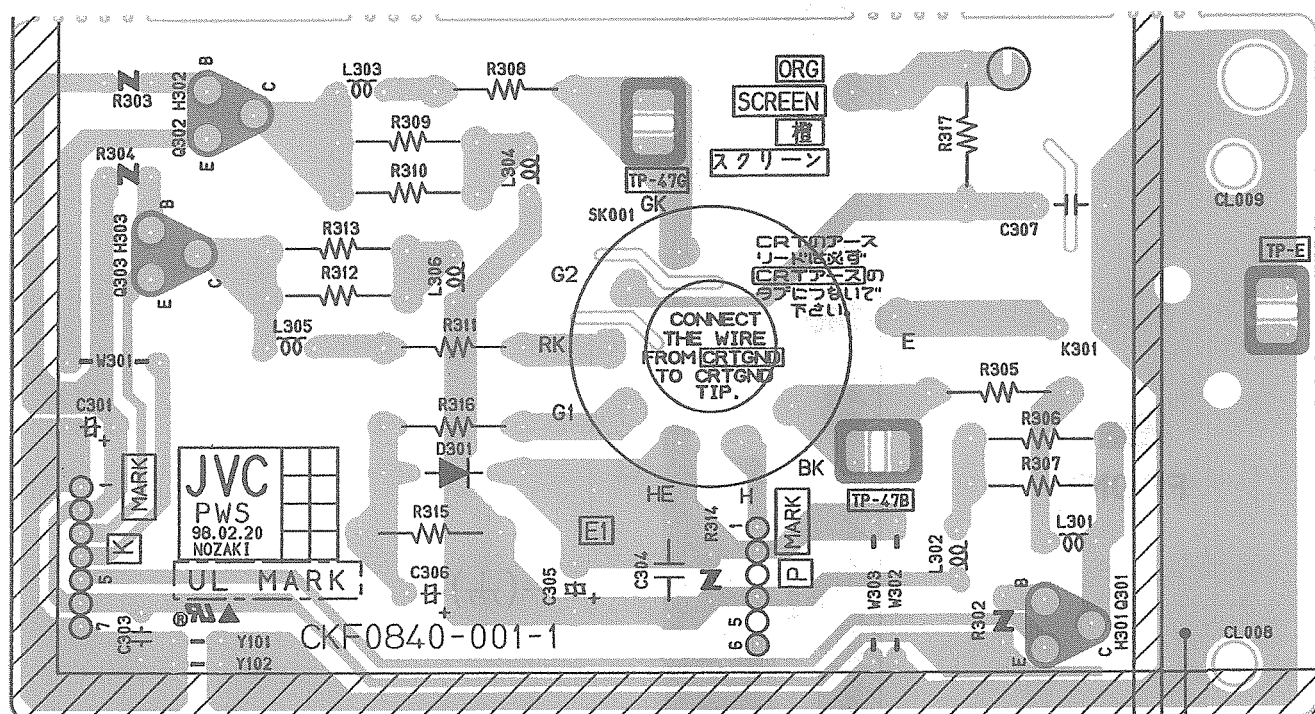


## INPUT PWB PATTERN



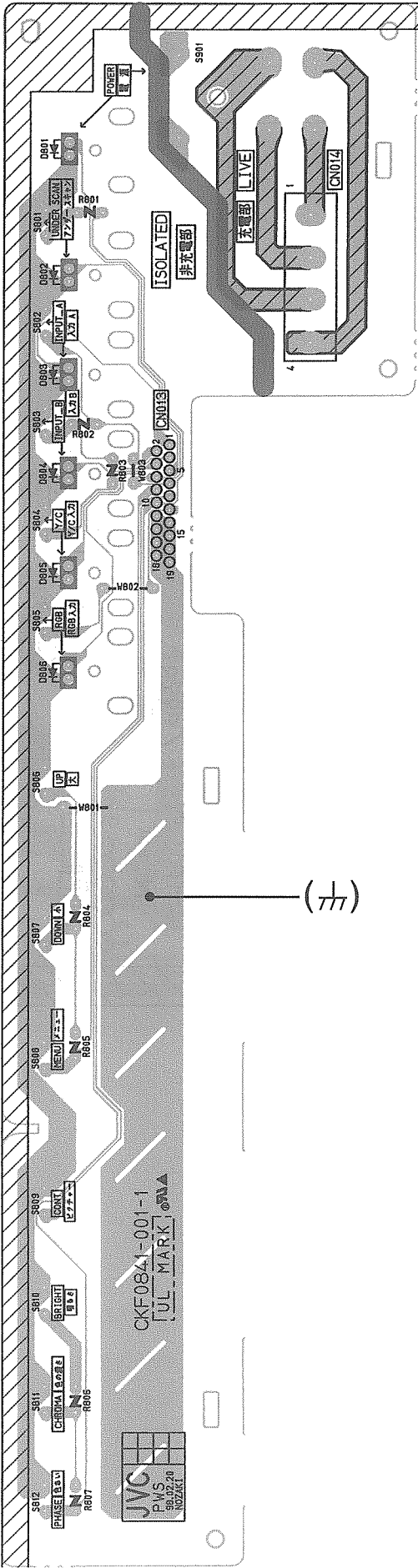
(77)

## CRT SOCKET PWB PATTERN


$$\left( \begin{array}{c} | \\ | \\ \hline \text{///} \end{array} \right)$$

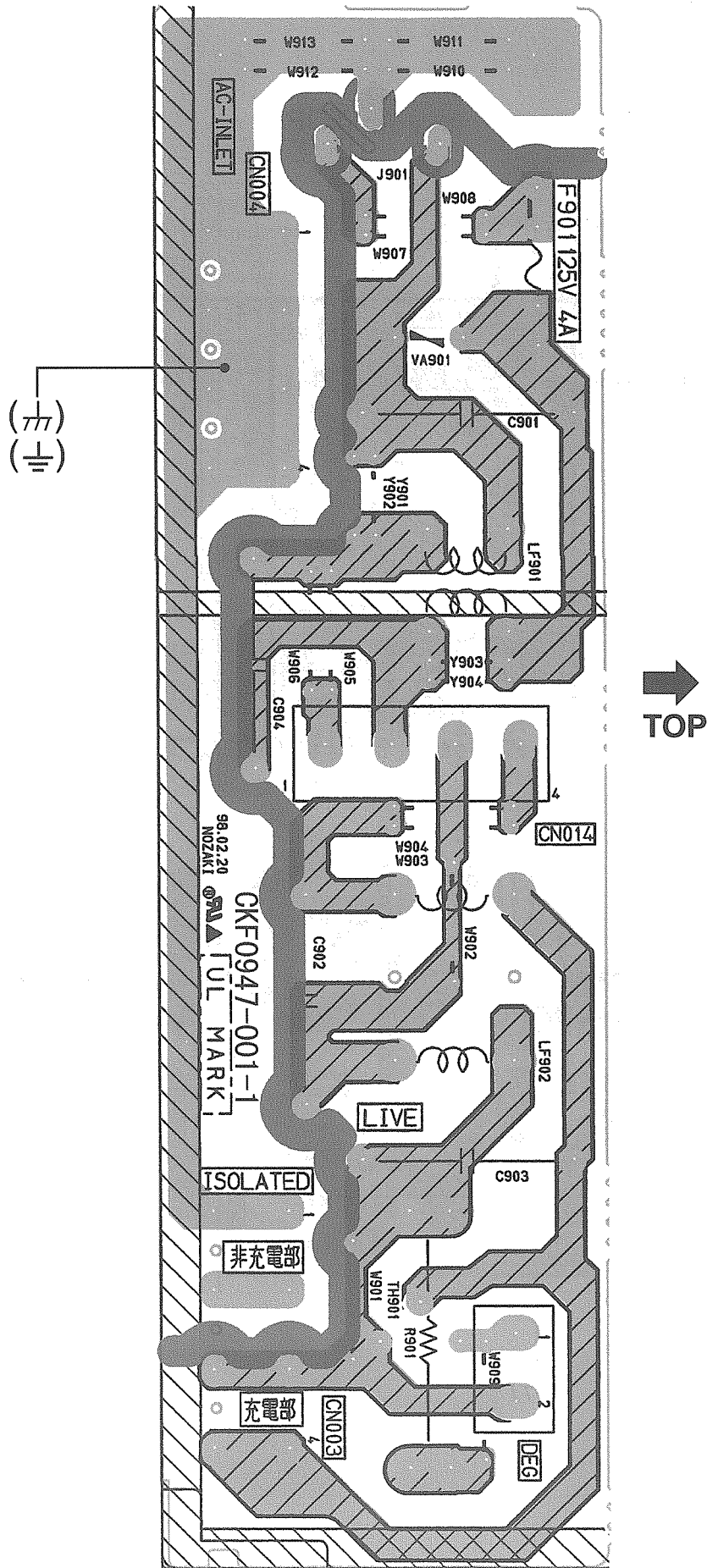
FRONT PWB PATTERN

FRONT



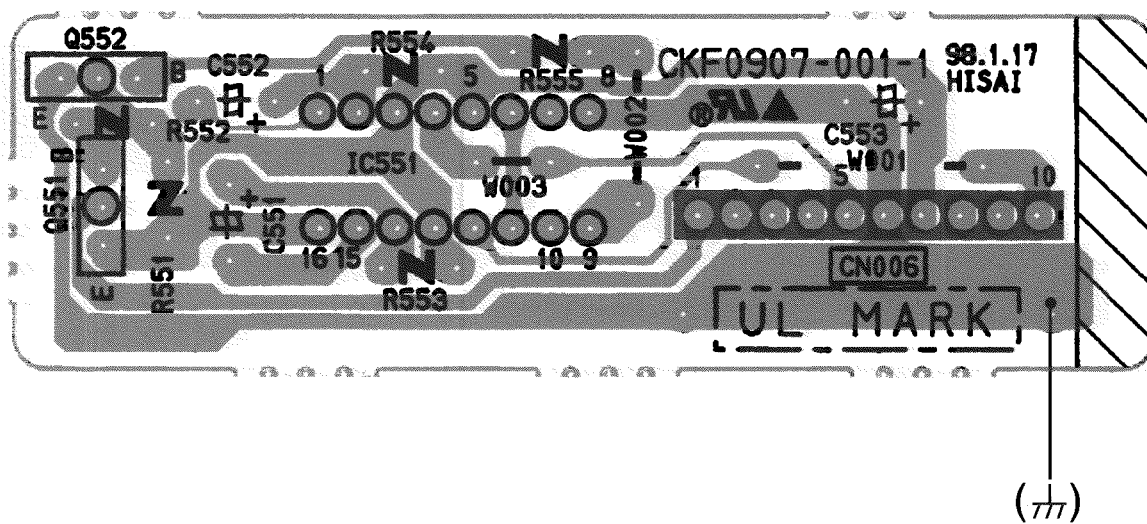


FILTER PWB PATTERN



RESET MODULE PWB PATTERN

←  
TOP








# PARTS LIST

## CAUTION

- The parts identified by the  symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety.
- The parts not indicated in this Parts List and those which are filled with lines — in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

## ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

| RESISTORS |                                                  | CAPACITORS      |                                               |
|-----------|--------------------------------------------------|-----------------|-----------------------------------------------|
| C R       | Carbon Resistor                                  | C CAP.          | Ceramic Capacitor                             |
| F R       | Fusible Resistor                                 | E CAP.          | Electrolytic Capacitor                        |
| P R       | Plate Resistor                                   | M CAP.          | Mylar Capacitor                               |
| V R       | Variable Resistor                                | HV CAP.         | High Voltage Capacitor                        |
| HV R      | High Voltage Resistor                            | MF CAP.         | Metalized Film Capacitor                      |
| MF R      | Metal Film Resistor                              | MM CAP.         | Metalized Mylar Capacitor                     |
| MG R      | Metal Glazed Resistor                            | MP CAP.         | Metalized Polystyrol Capacitor                |
| MP R      | Metal Plate Resistor                             | PP CAP.         | Polypropylene Capacitor                       |
| OM R      | Metal Oxide Film Resistor                        | PS CAP.         | Polystyrol Capacitor                          |
| CMF R     | Coating Metal Film Resistor                      | TF CAP.         | Thin Film Capacitor                           |
| UNF R     | Non-Flammable Resistor                           | MPP CAP.        | Metalized Polypropylene Capacitor             |
| CH V R    | Chip Variable Resistor                           | TAN. CAP.       | Tantalum Capacitor                            |
| CH MG R   | Chip Metal Glazed Resistor                       | CH C CAP.       | Chip Ceramic Capacitor                        |
| COMP. R   | Composition Resistor                             | BP E CAP.       | Bi-Polar Electrolytic Capacitor               |
| LPTC R    | Linear Positive Temperature Coefficient Resistor | CH AL E CAP.    | Chip Aluminum Electrolytic Capacitor          |
|           |                                                  | CH AL BP CAP.   | Chip Aluminum Bi-Polar Capacitor              |
|           |                                                  | CH TAN. E CAP.  | Chip Tantalum Electrolytic Capacitor          |
|           |                                                  | CH AL BP E CAP. | Chip Tantalum Bi-Polar Electrolytic Capacitor |

| TOLERANCES |     |     |      |      |      |      |      |      |       |
|------------|-----|-----|------|------|------|------|------|------|-------|
| F          | G   | J   | K    | M    | N    | R    | H    | Z    | P     |
| ±1%        | ±2% | ±5% | ±10% | ±20% | ±30% | +30% | +50% | +80% | +100% |
|            |     |     |      |      |      | -10% | -10% | -20% | -0%   |

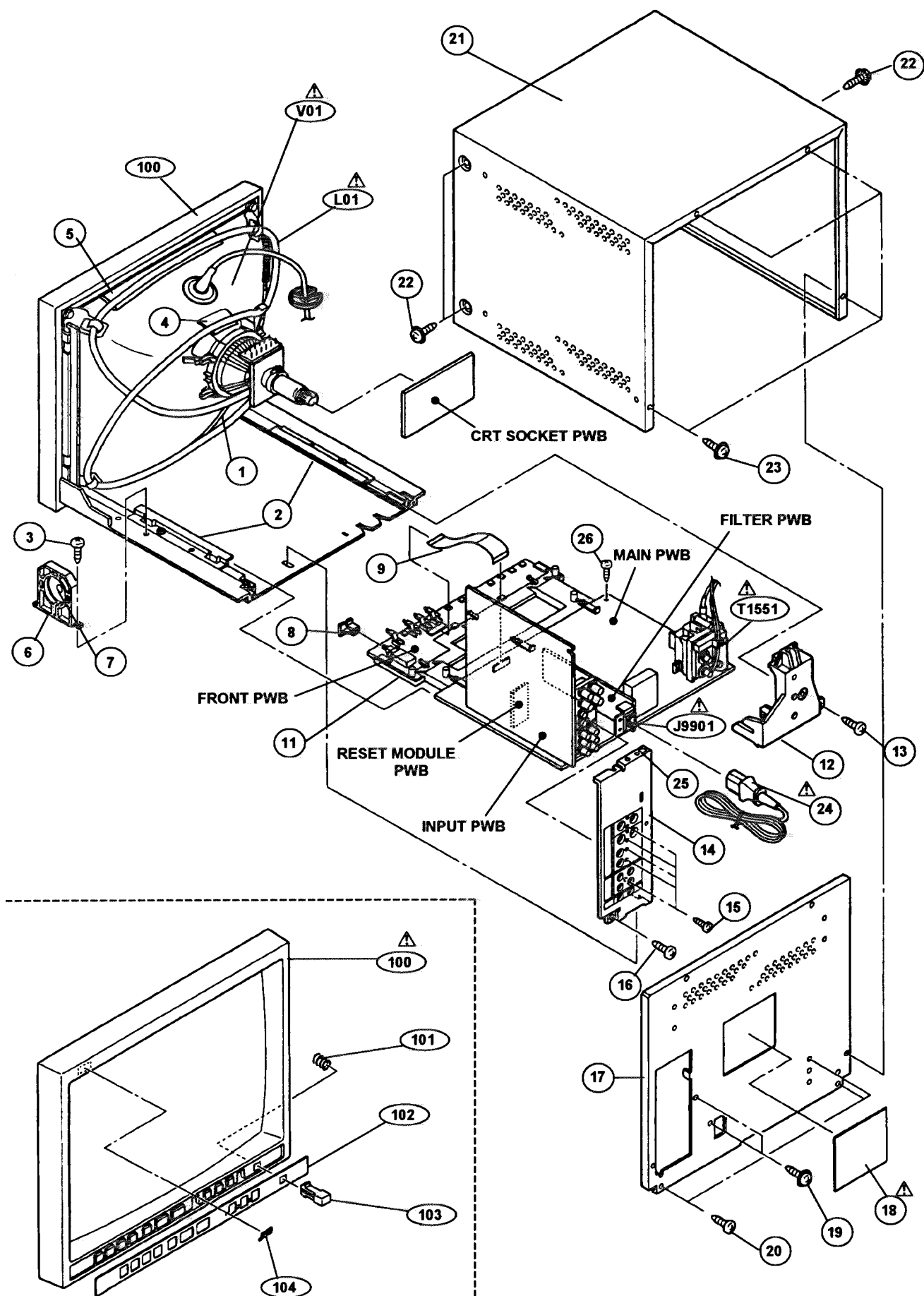
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## EXPLODED VIEW PARTS LIST

| △ Ref. No. | Part No.        | Part Name          | Description         | Local |
|------------|-----------------|--------------------|---------------------|-------|
| △ V01      | M41EEM311X360   | PICTURE TUBE (ITC) | (Within DY, PC)     |       |
| △ L01      | QQW0005-001     | DEGAUSSING COIL    |                     |       |
| △ T1551    | QQH0009-001     | FBT                | (Within MAIN PWB)   |       |
| △ J9901    | QMCB0006-C01    | AC INLET           | (Within FILTER PWB) |       |
| 1          | CHGB0015-0G-N   | BRAIDED ASSY       |                     |       |
| 2          | CM36537-A01     | GUIDE RAIL         | (×2)                |       |
| 3          | SBSF4012Z       | TAPPING SCREW      |                     |       |
| 4          | CM42321-008     | SPONGE             |                     |       |
| 5          | CM48296-001     | PROTECTOR          |                     |       |
| 6          | CM23137-B01     | SPEAKER HOLDER     |                     |       |
| 7          | CEBSS08P-01KJ2  | SPEAKER            |                     |       |
| 8          | CM48241-001     | KNOB CAP           |                     |       |
| 9          | CHFB119-14BD-N  | FFC WIRE           |                     |       |
| 11         | CM12883-C01     | CONNECT BASE       |                     |       |
| 12         | CM23099-C01-V0  | FBT HOLDER         |                     |       |
| 13         | SBSF4012Z       | TAPPING SCREW      |                     |       |
| 14         | CM23098-A01     | TERMINAL BKT       |                     |       |
| 15         | SBSB3010M       | TAPPING SCREW      | (×5)                |       |
| 16         | SBSF4012Z       | TAPPING SCREW      |                     |       |
| 17         | CM12882-002-EK  | REAR PANEL         |                     |       |
| △ 18       | CM22867-030 (R) | ROLL R LABEL       |                     |       |
| 19         | CM44287-00C     | ASSY SCREW         | (×2)                |       |
| 20         | SBSF4012Z       | TAPPING SCREW      | (×3)                |       |
| 21         | CM12894-003-EK  | TOP COVER          |                     |       |
| 22         | CM44287-00C     | ASSY SCREW         | (×4)                |       |
| 23         | CM44287-00C     | ASSY SCREW         | (×4)                |       |
| △ 24       | CM46843-001     | CORD CLAMP         |                     |       |
| △ 25       | CM44141-B01     | EARTH LABEL        |                     |       |
| 26         | SBSB3010M       | TAPPING SCREW      |                     |       |
| 100        | CM12880-D01-EK  | FRONT CABINET      | Inc. No. 101~104    |       |
| 101        | CM46757-001     | SPRING             |                     |       |
| 102        | CM23102-004     | CONTROL SHEET      |                     |       |
| 103        | CM46756-A01     | POWER KNOB         |                     |       |
| 104        | CM48149-A01     | JVC MARK           |                     |       |

## EXPLODED VIEW



## PRINTED WIRING BOARD PARTS LIST

## MAIN P.W. BOARD ASS'Y (FX-1102A)

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

## VARIABLE RESISTOR

|       |              |              |     |  |
|-------|--------------|--------------|-----|--|
| R1952 | QVP0053-102Z | V R (B1 ADJ) | 1kΩ |  |
|-------|--------------|--------------|-----|--|

## RESISTOR

|          |               |      |        |        |
|----------|---------------|------|--------|--------|
| R1402    | QRA14CF-2201Y | MF R | 2.2kΩ  | 1/4W F |
| R1403-04 | QRE121J-1R2Y  | C R  | 1.2Ω   | 1/2W J |
| R1405    | QRG01GJ-101   | OM R | 100Ω   | 1W J   |
| R1406    | QRE121J-1R5Y  | C R  | 1.5Ω   | 1/2W J |
| R1407    | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1409    | QRE141J-390Y  | C R  | 39Ω    | 1/4W J |
| R1461    | QRE141J-303Y  | C R  | 30kΩ   | 1/4W J |
| R1462    | QRE141J-102Y  | C R  | 1kΩ    | 1/4W J |
| R1463    | QRG039J-180   | OM R | 18 Ω   | 3W J   |
| R1464    | QRE121J-562Y  | C R  | 5.6kΩ  | 1/2W J |
| R1465    | QRE141J-472Y  | C R  | 4.7kΩ  | 1/4W J |
| R1466    | QRG039J-150   | OM R | 15 Ω   | 3W J   |
| R1467    | QRE121J-562Y  | C R  | 5.6kΩ  | 1/2W J |
| R1503    | QRE141J-563Y  | C R  | 56kΩ   | 1/4W J |
| R1505    | QRE141J-123Y  | C R  | 12kΩ   | 1/4W J |
| R1506    | QRE121J-152Y  | C R  | 1.5kΩ  | 1/2W J |
| R1507-08 | QRG029J-121   | OM R | 120 Ω  | 2W J   |
| R1521    | QRE121J-181Y  | C R  | 180Ω   | 1/2W J |
| R1522    | QRG029J-103   | OM R | 10kΩ   | 2W J   |
| R1526    | QRG029J-102   | OM R | 1kΩ    | 2W J   |
| R1556    | QRL029J-220   | OM R | 22Ω    | 2W J   |
| R1557    | QRE141J-333Y  | C R  | 33kΩ   | 1/4W J |
| R1558    | QRE141J-393Y  | C R  | 39kΩ   | 1/4W J |
| R1559    | QRE121J-472Y  | C R  | 4.7kΩ  | 1/2W J |
| R1571    | QRE141J-332Y  | C R  | 3.3kΩ  | 1/4W J |
| R1572    | QRA14CF-1692Y | MF R | 16.9kΩ | 1/4W F |
| R1573    | QRA14CF-4991Y | MF R | 4.99kΩ | 1/4W F |
| R1574-75 | QRE141J-102Y  | C R  | 1kΩ    | 1/4W J |
| R1576-77 | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1701-03 | QRE141J-681Y  | C R  | 680Ω   | 1/4W J |
| R1706-08 | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1711-15 | QRE141J-472Y  | C R  | 4.7kΩ  | 1/4W J |
| R1716-21 | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1722-23 | QRE141J-682Y  | C R  | 6.8kΩ  | 1/4W J |
| R1725    | QRE141J-122Y  | C R  | 1.2kΩ  | 1/4W J |
| R1726    | QRE141J-182Y  | C R  | 1.8kΩ  | 1/4W J |
| R1728    | QRE141J-102Y  | C R  | 1kΩ    | 1/4W J |
| R1729    | QRE141J-333Y  | C R  | 33kΩ   | 1/4W J |
| R1730    | QRE141J-222Y  | C R  | 2.2kΩ  | 1/4W J |
| R1731    | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1732    | QRE141J-102Y  | C R  | 1kΩ    | 1/4W J |
| R1734-35 | QRE141J-122Y  | C R  | 1.2kΩ  | 1/4W J |
| R1737    | QRE141J-560Y  | C R  | 56Ω    | 1/4W J |
| R1738    | QRE141J-101Y  | C R  | 100Ω   | 1/4W J |
| R1739    | QRE141J-560Y  | C R  | 56Ω    | 1/4W J |
| R1740    | QRE141J-101Y  | C R  | 100Ω   | 1/4W J |
| R1741    | QRE141J-560Y  | C R  | 56Ω    | 1/4W J |
| R1742    | QRE141J-101Y  | C R  | 100Ω   | 1/4W J |
| R1743    | QRE141J-223Y  | C R  | 22kΩ   | 1/4W J |
| R1744    | QRE141J-562Y  | C R  | 5.6kΩ  | 1/4W J |
| R1745    | QRE141J-102Y  | C R  | 1kΩ    | 1/4W J |
| R1746    | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1747    | QRE141J-563Y  | C R  | 56kΩ   | 1/4W J |
| R1748    | QRE141J-223Y  | C R  | 22kΩ   | 1/4W J |
| R1749    | QRE141J-823Y  | C R  | 82kΩ   | 1/4W J |
| R1750-51 | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1752    | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1753    | QRE141J-472Y  | C R  | 4.7kΩ  | 1/4W J |
| R1754    | QRE141J-101Y  | C R  | 100Ω   | 1/4W J |
| R1755    | QRE141J-152Y  | C R  | 1.5kΩ  | 1/4W J |
| R1756    | QRE141J-102Y  | C R  | 1kΩ    | 1/4W J |
| R1757    | QRE141J-822Y  | C R  | 8.2kΩ  | 1/4W J |
| R1758    | QRE141J-391Y  | C R  | 390Ω   | 1/4W J |
| R1759-60 | QRE141J-103Y  | C R  | 10kΩ   | 1/4W J |
| R1761    | QRE141J-472Y  | C R  | 4.7kΩ  | 1/4W J |
| R1762    | QRE141J-101Y  | C R  | 100Ω   | 1/4W J |

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

## RESISTOR

|          |               |       |        |        |
|----------|---------------|-------|--------|--------|
| R1763    | QRE141J-152Y  | C R   | 1.5kΩ  | 1/4W J |
| R1764    | QRE141J-102Y  | C R   | 1kΩ    | 1/4W J |
| R1765    | QRE141J-822Y  | C R   | 8.2kΩ  | 1/4W J |
| R1766    | QRE141J-391Y  | C R   | 390Ω   | 1/4W J |
| R1767-68 | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1769    | QRE141J-472Y  | C R   | 4.7kΩ  | 1/4W J |
| R1770    | QRE141J-101Y  | C R   | 100Ω   | 1/4W J |
| R1771    | QRE141J-152Y  | C R   | 1.5kΩ  | 1/4W J |
| R1772    | QRE141J-102Y  | C R   | 1kΩ    | 1/4W J |
| R1773    | QRE141J-822Y  | C R   | 8.2kΩ  | 1/4W J |
| R1774    | QRE141J-391Y  | C R   | 390Ω   | 1/4W J |
| R1775    | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1776    | QRE141J-472Y  | C R   | 4.7kΩ  | 1/4W J |
| R1777    | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1778    | QRE141J-472Y  | C R   | 4.7kΩ  | 1/4W J |
| R1779-80 | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1782    | QRE141J-472Y  | C R   | 4.7kΩ  | 1/4W J |
| R1784    | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1786    | QRE141J-681Y  | C R   | 680Ω   | 1/4W J |
| R1787-89 | QRE141J-102Y  | C R   | 1kΩ    | 1/4W J |
| R1791    | QRE141J-470Y  | C R   | 47Ω    | 1/4W J |
| R1792    | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1793    | QRE141J-102Y  | C R   | 1kΩ    | 1/4W J |
| R1794    | QRE141J-103Y  | C R   | 10kΩ   | 1/4W J |
| R1902    | QRF154K-4R7   | UNF R | 4.7 Ω  | 15W K  |
| R1931    | QRG039J-333   | OM R  | 33kΩ   | 3W J   |
| R1932    | QRL029J-473   | OM R  | 47Ω    | 2W J   |
| R1933    | QRG039J-333   | OM R  | 33kΩ   | 3W J   |
| R1937    | QRE141J-102Y  | C R   | 1kΩ    | 1/4W J |
| R1938    | QRE141J-182Y  | C R   | 1.8kΩ  | 1/4W J |
| R1939    | QRJ146J-101X  | C R   | 100Ω   | 1/4W J |
| R1940    | QRJ146J-392X  | C R   | 3.9kΩ  | 1/4W J |
| R1943    | QRG01GJ-150   | OM R  | 15Ω    | 1W J   |
| R1944    | QRT029J-2R7   | MF R  | 2.7Ω   | 2W J   |
| R1945    | QRM059J-R33   | MP R  | 0.33 Ω | 5W J   |
| R1947    | QRJ146J-102X  | C R   | 1kΩ    | 1/4W J |
| R1948    | QRE141J-273Y  | C R   | 27kΩ   | 1/4W J |
| R1949    | QRE141J-154Y  | C R   | 150kΩ  | 1/4W J |
| R1950-51 | QRA14CF-1502Y | MF R  | 15kΩ   | 1/4W F |
| R1954    | QRA14CF-4701Y | MF R  | 4.7kΩ  | 1/4W F |
| R1955    | QRT029J-R82   | MF R  | 0.82Ω  | 2W J   |
| R1956    | QRT029J-1R0   | MF R  | 1.0Ω   | 2W J   |
| R1958    | QRE141J-272Y  | C R   | 2.7kΩ  | 1/4W J |
| R1959    | QRE141J-183Y  | C R   | 18kΩ   | 1/4W J |
| R1960    | QRE141J-562Y  | C R   | 5.6kΩ  | 1/4W J |
| R1961    | QRE121J-1R8Y  | C R   | 1.8Ω   | 1/2W J |
| R1971    | QRG039J-152   | OM R  | 1.5kΩ  | 3W J   |

## CAPACITOR

|       |              |                 |         |             |
|-------|--------------|-----------------|---------|-------------|
| C1402 | QCS31HJ-180Z | C CAP.          | 18pF    | 50V J       |
| C1406 | QFLC2AK-563Z | M CAP.          | 0.056μF | 100V K      |
| C1407 | QFLC2AJ-103Z | M CAP.          | 0.01μF  | 100V J      |
| C1408 | QFV71HJ-474Z | MF CAP.         | 0.47μF  | 50V J       |
| C1409 | QFLC2AK-393Z | M CAP.          | 0.039μF | 100V K      |
| C1411 | QFLC2AJ-103Z | M CAP.          | 0.01μF  | 100V J      |
| C1412 | QCB31HK-103Z | C CAP.          | 0.01μF  | 50V K       |
| C1413 | QCB31HK-272Z | C CAP.          | 2700pF  | 50V K       |
| C1414 | QFV71HJ-474Z | MF CAP.         | 0.47μF  | 50V J       |
| C1415 | QFV71HJ-124Z | MF CAP.         | 0.12μF  | 50V J       |
| C1416 | QCS31HJ-221Z | C CAP.          | 220pF   | 50V J       |
| C1417 | QCS31HJ-390Z | C CAP.          | 39pF    | 50V J       |
| C1462 | QEM61HK-475Z | E CAP.          | 4.7μF   | 50V K       |
| C1464 | QCB31HK-152Z | C CAP.          | 1500pF  | 50V K       |
| C1502 | QCB32HK-681Z | C CAP.          | 680pF   | 500V K      |
| C1503 | QEH2AM-225Z  | E CAP.          | 2.2μF   | 100V M      |
| C1520 | QFZ0119-904  | M.PP. CAPACITOR | 0.09μF  | 200V ±3%    |
| C1521 | QFZ0117-1001 | M.PP. CAPACITOR | 1000pF  | 1.4kVH±2.5% |
| C1522 | QFZ0117-1202 | M.PP. CAPACITOR | 0.012μF | 1.4kVH±2.5% |

| △ Symbol No.     | Part No.     | Part Name      | Description       | Local |
|------------------|--------------|----------------|-------------------|-------|
| <b>CAPACITOR</b> |              |                |                   |       |
| C1523            | QFP32GJ-273  | PP CAP.        | 0.027μF 400V J    |       |
| C1524            | QFZ0119-155  | M.PP CAPACITOR | 1.5μF 200V ±3%    |       |
| C1525            | QETC2CM-475Z | E CAP.         | 4.7μF 160V M      |       |
| C1527            | QEH82AM-477  | E CAP.         | 470μF 100V M      |       |
| C1528            | QFZ0117-6001 | M.PP CAPACITOR | 6000pF1.4KVH±2.5% |       |
| C1555            | QEH82CM-107  | E CAP.         | 100μF 160V M      |       |
| C1556            | QETM1CM-478  | E CAP.         | 4700μF 16V M      |       |
| C1557            | QEH11M-107Z  | E CAP.         | 100μF 63V M       |       |
| C1558            | QETM1CM-108Z | E CAP.         | 1000μF 16V M      |       |
| C1559            | QETM1CM-477Z | E CAP.         | 470μF 16V M       |       |
| C1560            | QEH11M-227Z  | E CAP.         | 220μF 50V M       |       |
| C1562            | QFV71HJ-124Z | MF CAP.        | 0.12μF 50V J      |       |
| C1563            | QEH12AM-225Z | E CAP.         | 2.2μF 100V M      |       |
| C1571            | QCB31HK-682Z | C CAP.         | 6800pF 50V K      |       |
| C1572            | QETM2AM-106Z | E CAP.         | 10μF 100V M       |       |
| C1573            | QETM1HM-105Z | E CAP.         | 1μF 50V M         |       |
| C1574-75         | QEH11EM-107Z | E CAP.         | 100μF 25V M       |       |
| C1701            | QETM1EM-227Z | E CAP.         | 220μF 25V M       |       |
| C1702            | QFLC1HJ-104Z | M CAP.         | 0.1μF 50V J       |       |
| C1703            | QFV71HJ-124Z | MF CAP.        | 0.12μF 50V J      |       |
| C1704            | QETM1AM-227Z | E CAP.         | 220μF 10V M       |       |
| C1705            | QFLC1HJ-104Z | M CAP.         | 0.1μF 50V J       |       |
| C1706            | QDC31HJ-560Z | C CAP.         | 56pF 50V J        |       |
| C1707            | QDC31HJ-680Z | C CAP.         | 68pF 50V J        |       |
| C1708            | QENC1EM-106Z | BP E CAP.      | 10μF 25V M        |       |
| C1709            | QETM1AM-107Z | E CAP.         | 100μF 10V M       |       |
| C1710            | QCS31HJ-221Z | C CAP.         | 220pF 50V J       |       |
| C1711            | QCS31HJ-181Z | C CAP.         | 180pF 50V J       |       |
| C1712            | QCS31HJ-271Z | C CAP.         | 270pF 50V J       |       |
| C1713            | QCB31HK-102Z | C CAP.         | 1000pF 50V K      |       |
| C1714            | QCS31HJ-271Z | C CAP.         | 270pF 50V J       |       |
| C1715            | QETM1HM-336Z | E CAP.         | 33μF 50V M        |       |
| C1716            | QFLC1HJ-103Z | M CAP.         | 0.01μF 50V J      |       |
| C1717            | QETM1HM-336Z | E CAP.         | 33μF 50V M        |       |
| C1718            | QFLC1HJ-103Z | M CAP.         | 0.01μF 50V J      |       |
| C1719            | QETM1HM-336Z | E CAP.         | 33μF 50V M        |       |
| C1720            | QFLC1HJ-103Z | M CAP.         | 0.01μF 50V J      |       |
| C1721            | QETM1HM-225Z | E CAP.         | 2.2μF 50V M       |       |
| C1722            | QETM1HM-106Z | E CAP.         | 10μF 50V M        |       |
| C1723            | QETM1CM-107Z | E CAP.         | 100μF 16V M       |       |
| △ C1724-26       | QCS31HJ-390Z | C CAP.         | 39pF 50V J        |       |
| △ C1901          | QCZ9079-471  | C CAP.         | 470pFAC400V K     |       |
| △ C1902          | QCZ9079-471  | C CAP.         | 470pFAC400V K     |       |
| △ C1903          | QCZ9086-472  | C CAP.         | 4700pFAC400V P    |       |
| △ C1904          | QCZ9086-472  | C CAP.         | 4700pFAC400V P    |       |
| △ C1905          | QCZ9086-472  | C CAP.         | 4700pFAC400V P    |       |
| C1911            | QEZ0371-397  | E CAP.         | 390μF 400V M      |       |
| C1931            | QCB32HK-472Z | C CAP.         | 4700pF 500V K     |       |
| C1932            | QCZ0122-561  | C CAP.         | 560pF 2000V K     |       |
| C1933            | QCZ0325-151  | C CAP.         | 150pF 2000V K     |       |
| C1934            | QCZ0325-102  | C CAP.         | 1000pF 2000V K    |       |
| C1935            | QCB32HK-472Z | C CAP.         | 4700pF 500V K     |       |
| C1936            | QCB32HK-471Z | C CAP.         | 470pF 500V K      |       |
| C1938            | QETM1EM-477Z | E CAP.         | 470μF 25V M       |       |
| C1939            | QCB31HK-152Z | C CAP.         | 1500pF 50V K      |       |
| C1940            | QETM1CM-227Z | E CAP.         | 220μF 16V M       |       |
| C1941            | QCS31HJ-391Z | C CAP.         | 390pF 50V J       |       |
| C1942            | QETM1AM-107Z | E CAP.         | 100μF 10V M       |       |
| C1943            | QETM1HM-105Z | E CAP.         | 1μF 50V M         |       |
| C1971            | QCB32HK-152Z | C CAP.         | 1500pF 500V K     |       |
| C1975-76         | QEH82AM-227  | E CAP.         | 220μF 100V M      |       |
| C1977            | QETM1CM-228  | E CAP.         | 2200μF 16V M      |       |
| C1978            | QETM1EM-108Z | E CAP.         | 1000μF 25V M      |       |
| C1983            | QEM61EK-225Z | E CAP.         | 2.2μF 25V K       |       |
| C1984            | QETM1CM-107Z | E CAP.         | 100μF 16V M       |       |
| △ C1985          | QFLC2AK-102Z | M CAP.         | 1000pF 100V K     |       |
| △ C1991          | QCZ9079-222  | C CAP.         | 2200pFAC400V M    |       |

**TRANSFORMER**

|         |             |                 |
|---------|-------------|-----------------|
| △ T1501 | CE42034-001 | H.DRIVE TRANSF. |
| △ T1551 | QQH0009-001 | FBT             |

| △ Symbol No. | Part No. | Part Name | Description | Local |
|--------------|----------|-----------|-------------|-------|
|--------------|----------|-----------|-------------|-------|

**TRANSFORMER**

|         |             |                |
|---------|-------------|----------------|
| △ T1901 | CETS075-001 | SWITCH TRANSF. |
|---------|-------------|----------------|

**COIL**

|          |              |                |       |   |
|----------|--------------|----------------|-------|---|
| L1401    | QQL2018-240  | COIL           | 24μH  |   |
| L1461    | QQL43AK-271  | COIL           | 270μH | K |
| L1521    | CE40970-00A  | LINEARITY COIL |       |   |
| L1551    | QQL2018-480  | HEATER CHOKE   |       |   |
| L1701    | QQL01BK-4R7Z | COIL           | 4.7μH | K |
| L1702    | QQL01BK-8R2Z | COIL           | 8.2μH | K |
| L1971-72 | QQL26AK-560Z | COIL           | 56μH  | K |

**DIODE**

|            |                |              |
|------------|----------------|--------------|
| D1401      | 1SS120-T2      | SI DIODE     |
| D1402      | MTZJ33B-T2     | ZENER DIODE  |
| D1403      | MTZJ24B-T2     | ZENER DIODE  |
| D1404      | 1SS133-T2      | SI DIODE     |
| D1405      | RD62E/B/-T2    | ZENER DIODE  |
| D1407      | MTZJ18A-T2     | ZENER DIODE  |
| D1461      | MTZJ33B-T2     | ZENER DIODE  |
| D1521      | RH3G-F1        | SI DIODE     |
| D1522      | RU30-F1        | SI DIODE     |
| D1523      | BYD33G-T3      | SI DIODE     |
| D1524      | 1SS133-T2      | SI DIODE     |
| D1550-51   | BYD33G-T3      | SI DIODE     |
| D1552      | RU30-F1        | SI DIODE     |
| D1553      | BYD33G-T3      | SI DIODE     |
| D1555      | MTZJ15B-T2     | ZENER DIODE  |
| D1562      | 1SS244-T2      | SI DIODE     |
| D1563      | BYD33G-T3      | SI DIODE     |
| D1571      | 1SS133-T2      | SI DIODE     |
| D1572      | MTZJ6.8C-T2    | ZENER DIODE  |
| D1574      | 1SS133-T2      | SI DIODE     |
| D1575      | 1SS244-T2      | SI DIODE     |
| D1576      | 1SS133-T2      | SI DIODE     |
| D1577      | 1SS244-T2      | SI DIODE     |
| D1701      | 1SS133-T2      | SI DIODE     |
| D1702-03   | MA700A-T2      | SI DIODE     |
| D1704-05   | 1SS133-T2      | SI DIODE     |
| D1707-08   | 1SS133-T2      | SI DIODE     |
| D1709      | MTZJ6.2B-T2    | ZENER DIODE  |
| △ D1710-11 | 1SS133-T2      | SI DIODE     |
| △ D1901    | D3SBA60        | DIODE BRIDGE |
| D1931      | RU1C-LFC4      | SI DIODE     |
| D1934      | RGP10J-5025-T3 | SI DIODE     |
| D1935      | 1SS133-T2      | SI DIODE     |
| D1936      | MTZJ12C-T2     | ZENER DIODE  |
| D1938      | EG1Z-T3        | SI DIODE     |
| D1939      | 1SS133-T2      | SI DIODE     |
| D1940      | MA4068M/Z1/-T2 | ZENER DIODE  |
| D1941      | MTZJ7.5S-T2    | ZENER DIODE  |
| D1971-72   | RU30-F1        | SI DIODE     |
| D1973-74   | RU3YX-LFC4     | SI DIODE     |
| D1975      | RGP10J-5025-T3 | SI DIODE     |
| D1976      | 1SS133-T2      | SI DIODE     |
| D1977      | MTZJ10B-T2     | ZENER DIODE  |

**TRANSISTOR**

|          |                   |                  |  |        |
|----------|-------------------|------------------|--|--------|
| Q1461    | 2SB941A/QP/BSM274 | SI TRANSISTOR    |  |        |
| △ Q1501  | 2SD2553-LB        | SI TRANSISTOR    |  | H. OUT |
| Q1571    | 2SC3311A/QR/-T    | SI TRANSISTOR    |  |        |
| Q1572    | 2SD1853-T         | SI TRANSISTOR    |  |        |
| Q1701-03 | DTA124ESA-T       | DIGI. TRANSISTOR |  |        |
| Q1706    | 2SC3311A/QR/-T    | SI TRANSISTOR    |  |        |
| Q1707    | DTA124ESA-T       | DIGI. TRANSISTOR |  |        |
| Q1708-09 | 2SA1309A/QR/-T    | SI TRANSISTOR    |  |        |
| Q1711-13 | 2SC3311A/QR/-T    | SI TRANSISTOR    |  |        |
| Q1714-15 | DTC124ESA-T       | DIGI. TRANSISTOR |  |        |
| Q1716    | 2SC3311A/QR/-T    | SI TRANSISTOR    |  |        |
| Q1717    | 2SA1309A/QR/-T    | SI TRANSISTOR    |  |        |

| Symbol No. | Part No.       | Part Name        | Description | Local |
|------------|----------------|------------------|-------------|-------|
| Q1718      | 2SC3311A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1719      | 2SA1309A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1720      | 2SC3311A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1721      | 2SA1309A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1723      | 2SA1309A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1724      | 2SK301/Q/-T    | F. E. T.         |             |       |
| Q1725      | DTA124ESA-T    | DIGI. TRANSISTOR |             |       |
| Q1726      | DTC124ESA-T    | DIGI. TRANSISTOR |             |       |
| Q1727-29   | 2SC3311A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1732      | 2SC3311A/QR/-T | SI. TRANSISTOR   |             |       |
| Q1932      | 2SA949/Y/Z1    | SI. TRANSISTOR   |             |       |
| Q1933      | 2SC1959/Y/-T   | SI. TRANSISTOR   |             |       |

|           |                 |                     |           |  |
|-----------|-----------------|---------------------|-----------|--|
| <b>IC</b> |                 |                     |           |  |
| IC1401    | TDA8350Q/NS     | I. C. (MONO-ANA)    |           |  |
| IC1551    | LM2940CT-12     | I. C. (MONO-ANA)    |           |  |
| IC1701    | M37212M6-108SP  | I. C. (MICRO-COMP)  |           |  |
| IC1702    | L78L05E-MA      | I. C. (MONO-ANA)    |           |  |
| IC1703    | AT24C08-1700PN  | I. C.               | (SERVICE) |  |
| IC1931    | STR-S6707       | I. C. (HYBRID)      |           |  |
| IC1932    | TLP721F (D4-GR) | I. C. (PH. COUPLER) |           |  |
| IC1972    | KIA7808P1       | I. C. (MONO-ANA)    |           |  |

|               |               |                  |                    |   |
|---------------|---------------|------------------|--------------------|---|
| <b>OTHERS</b> |               |                  |                    |   |
| CN1001-02     | CHB303W-25R-J | 25P DIN M CONNEX |                    |   |
| CN1003        | CHB801N-04P-J | GTS CONNECTOR    |                    |   |
| CN1004        | CHB801N-04P-J | GTS CONNECTOR    |                    |   |
| CN1013        | CHC108N-19T-A | FFC CONNECTOR    |                    |   |
| CP1974        | ICP-N10-Y     | I. C. PROTECT    |                    |   |
| CP1975        | ICP-N5-Y      | I. C. PROTECT    |                    |   |
| FR1552        | QRZ9024-R82   | FUSI. RESISTOR   | 0.82 $\Omega$ 2W   | K |
| FR1553        | QRZ9011-100   | FUSI. RESISTOR   | 10 $\Omega$ 1/2W   | J |
| FR1554        | QRZ9017-4R7   | FUSI. RESISTOR   | 4.7 $\Omega$ 1/4W  | J |
| FR1582        | QRZ9011-4R7   | FUSI. RESISTOR   | 4.7 $\Omega$ 1/2W  | J |
| FR1973        | QRZ9021-8R2   | FUSI. RESISTOR   | 8.2 $\Omega$ 1W    | J |
| FR1974        | QRZ9013-R56   | FUSI. RESISTOR   | 0.56 $\Omega$ 1/2W | K |
| K1401-02      | CE41433-001Z  | BEADS CORE       |                    |   |
| K1701-02      | CE41433-001Z  | BEADS CORE       |                    |   |
| K1931         | CE42050-001Z  | CORE             |                    |   |
| K1972         | CE41433-001Z  | BEADS CORE       |                    |   |
| K1973         | CE42050-001Z  | CORE             |                    |   |
| X1701         | CST8.00MTW    | CER. RESONATOR   |                    |   |

## FRONT P.W. BOARD ASS'Y (FX-4051A)

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

## RESISTOR

|          |              |     |                    |   |
|----------|--------------|-----|--------------------|---|
| R4802    | QRE141J-332Y | C R | 3.3k $\Omega$ 1/4W | J |
| R4803-04 | QRE141J-562Y | C R | 5.6k $\Omega$ 1/4W | J |
| R4805    | QRE141J-332Y | C R | 3.3k $\Omega$ 1/4W | J |
| R4806    | QRE141J-562Y | C R | 5.6k $\Omega$ 1/4W | J |
| R4807    | QRE141J-332Y | C R | 3.3k $\Omega$ 1/4W | J |

## DIODE

|          |        |                |  |  |
|----------|--------|----------------|--|--|
| D4801    | GL2EG6 | L. E. D. (GRN) |  |  |
| D4803-05 | GL2EG6 | L. E. D. (GRN) |  |  |

## OTHERS

|        |               |                 |           |  |
|--------|---------------|-----------------|-----------|--|
| CN4013 | CN46978-A01-H | L. E. D. HOLDER |           |  |
| S4802  | QSP1A11-C18Z  | PUSH SWITCH     | (INPUT-A) |  |
| S4803  | QSP1A11-C18Z  | PUSH SWITCH     | (INPUT-B) |  |
| S4804  | QSP1A11-C18Z  | PUSH SWITCH     | (Y/C)     |  |
| S4806  | QSP1A11-C18Z  | PUSH SWITCH     | (UP)      |  |
| S4807  | QSP1A11-C18Z  | PUSH SWITCH     | (DOWN)    |  |
| S4808  | QSP1A11-C18Z  | PUSH SWITCH     | (MENU)    |  |
| S4809  | QSP1A11-C18Z  | PUSH SWITCH     | (CONT)    |  |
| S4810  | QSP1A11-C18Z  | PUSH SWITCH     | (BRIGHT)  |  |
| S4811  | QSP1A11-C18Z  | PUSH SWITCH     | (CHROMA)  |  |
| S4812  | QSP1A11-C18Z  | PUSH SWITCH     | (PHASE)   |  |
| S4901  | QSP4K21-C01   | PUSH SWITCH     | (POWER)   |  |

## CRT SOCKET P.W. BOARD ASS'Y (FX-3053A)

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

## RESISTOR

|          |              |         |                    |   |
|----------|--------------|---------|--------------------|---|
| R3302-04 | QRE141J-101Y | C R     | 100 $\Omega$ 1/4W  | J |
| R3305    | QRC121K-102Z | COMP. R | 1k $\Omega$ 1/2W   | K |
| R3306-07 | QRL029J-153  | OM R    | 15k $\Omega$ 2W    | J |
| R3308    | QRC121K-102Z | COMP. R | 1k $\Omega$ 1/2W   | K |
| R3309-10 | QRL029J-153  | OM R    | 15k $\Omega$ 2W    | J |
| R3311    | QRC121K-102Z | COMP. R | 1k $\Omega$ 1/2W   | K |
| R3312-13 | QRL029J-153  | OM R    | 15k $\Omega$ 2W    | J |
| R3314    | QRE141J-474Y | C R     | 470k $\Omega$ 1/4W | J |
| R3315    | QRC121K-105Z | COMP. R | 1M $\Omega$ 1/2W   | K |
| R3316    | QRC121K-102Z | COMP. R | 1k $\Omega$ 1/2W   | K |
| R3317    | QRC121K-474Z | COMP. R | 470k $\Omega$ 1/2W | K |

## CAPACITOR

|       |              |        |                  |   |
|-------|--------------|--------|------------------|---|
| C3301 | QETN1CM-107Z | E CAP. | 100 $\mu$ F 16V  | M |
| C3303 | QFLC1HJ-103Z | M CAP. | 0.01 $\mu$ F 50V | J |
| C3305 | QETN2EM-336  | E CAP. | 33 $\mu$ F 250V  | M |
| C3306 | QETN2EM-105Z | E CAP. | 1 $\mu$ F 250V   | M |
| C3307 | QCZ0121-102  | C CAP. | 1000pF 3000V     | Z |

## COIL

|       |              |      |             |   |
|-------|--------------|------|-------------|---|
| L3302 | QQL01BK-101Z | COIL | 100 $\mu$ H | K |
| L3304 | QQL01BK-101Z | COIL | 100 $\mu$ H | K |
| L3306 | QQL01BK-101Z | COIL | 100 $\mu$ H | K |

## DIODE

|       |                |           |  |  |
|-------|----------------|-----------|--|--|
| D3301 | RGP10J-5025-T3 | SI. DIODE |  |  |
|-------|----------------|-----------|--|--|

## TRANSISTOR

|          |            |                |  |  |
|----------|------------|----------------|--|--|
| Q3301-03 | 2SC4544-LB | SI. TRANSISTOR |  |  |
|----------|------------|----------------|--|--|

## OTHERS

|        |             |                 |  |  |
|--------|-------------|-----------------|--|--|
| SK3001 | CE42554-001 | C. R. T. SOCKET |  |  |
|--------|-------------|-----------------|--|--|

## INPUT P.W. BOARD ASS'Y (FX-6058A)

| △ Symbol No.    | Part No.      | Part Name | Description  | Local |
|-----------------|---------------|-----------|--------------|-------|
| <b>RESISTOR</b> |               |           |              |       |
| R6001           | QRE141J-750Y  | C R       | 75Ω 1/4W J   |       |
| R6002           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6003           | QRE141J-273Y  | C R       | 27kΩ 1/4W J  |       |
| R6004           | QRE141J-563Y  | C R       | 56kΩ 1/4W J  |       |
| R6005           | QRE141J-562Y  | C R       | 5.6kΩ 1/4W J |       |
| R6006           | QRE141J-750Y  | C R       | 75Ω 1/4W J   |       |
| R6007           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6008           | QRE141J-273Y  | C R       | 27kΩ 1/4W J  |       |
| R6009           | QRE141J-563Y  | C R       | 56kΩ 1/4W J  |       |
| R6010           | QRE141J-562Y  | C R       | 5.6kΩ 1/4W J |       |
| R6011-12        | QRE141J-750Y  | C R       | 75Ω 1/4W J   |       |
| R6013           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6014           | QRE141J-273Y  | C R       | 27kΩ 1/4W J  |       |
| R6015           | QRE141J-563Y  | C R       | 56kΩ 1/4W J  |       |
| R6016           | QRE141J-562Y  | C R       | 5.6kΩ 1/4W J |       |
| R6017           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6020           | QRE141J-104Y  | C R       | 100kΩ 1/4W J |       |
| R6021-22        | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6051-52        | QRE141J-822Y  | C R       | 8.2kΩ 1/4W J |       |
| R6101           | QRE141J-223Y  | C R       | 22kΩ 1/4W J  |       |
| R6102           | QRE141J-562Y  | C R       | 5.6kΩ 1/4W J |       |
| R6103           | QRE141J-181Y  | C R       | 180Ω 1/4W J  |       |
| R6104           | QRE141J-271Y  | C R       | 270Ω 1/4W J  |       |
| R6105           | QRE141J-821Y  | C R       | 820Ω 1/4W J  |       |
| R6107           | QRE141J-820Y  | C R       | 82Ω 1/4W J   |       |
| R6108           | QRE141J-103Y  | C R       | 10kΩ 1/4W J  |       |
| R6109           | QRE141J-821Y  | C R       | 820Ω 1/4W J  |       |
| R6110           | QRE141J-122Y  | C R       | 1.2kΩ 1/4W J |       |
| R6111           | QRE141J-391Y  | C R       | 390Ω 1/4W J  |       |
| R6112           | QRE141J-682Y  | C R       | 6.8kΩ 1/4W J |       |
| R6113           | QRE141J-332Y  | C R       | 3.3kΩ 1/4W J |       |
| R6114           | QRE141J-682Y  | C R       | 6.8kΩ 1/4W J |       |
| R6116           | QRE141J-102Y  | C R       | 1kΩ 1/4W J   |       |
| R6117           | QRE141J-334Y  | C R       | 330kΩ 1/4W J |       |
| R6118           | QRE141J-391Y  | C R       | 390Ω 1/4W J  |       |
| R6119           | QRE141J-153Y  | C R       | 15kΩ 1/4W J  |       |
| R6120           | QRE141J-123Y  | C R       | 12kΩ 1/4W J  |       |
| R6121           | QRE141J-333Y  | C R       | 33kΩ 1/4W J  |       |
| R6123           | QRE141J-221Y  | C R       | 220Ω 1/4W J  |       |
| R6131           | QRE141J-122Y  | C R       | 1.2kΩ 1/4W J |       |
| R6132           | QRE141J-222Y  | C R       | 2.2kΩ 1/4W J |       |
| R6133           | QRE141J-122Y  | C R       | 1.2kΩ 1/4W J |       |
| R6134           | QRE141J-272Y  | C R       | 2.7kΩ 1/4W J |       |
| R6135           | QRE141J-222Y  | C R       | 2.2kΩ 1/4W J |       |
| R6136           | QRE141J-122Y  | C R       | 1.2kΩ 1/4W J |       |
| R6137           | QRE141J-272Y  | C R       | 2.7kΩ 1/4W J |       |
| R6138           | QRE141J-122Y  | C R       | 1.2kΩ 1/4W J |       |
| R6140           | QRE141J-103Y  | C R       | 10kΩ 1/4W J  |       |
| R6141-42        | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6143           | QRA14CF-3902Y | MF R      | 39kΩ 1/4W F  |       |
| R6150-52        | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6154           | QRE141J-392Y  | C R       | 3.9kΩ 1/4W J |       |
| R6155           | QRE141J-102Y  | C R       | 1kΩ 1/4W J   |       |
| R6156           | QRE141J-392Y  | C R       | 3.9kΩ 1/4W J |       |
| R6157           | QRE141J-182Y  | C R       | 1.8kΩ 1/4W J |       |
| R6158           | QRE141J-272Y  | C R       | 2.7kΩ 1/4W J |       |
| R6201-02        | QRE141J-102Y  | C R       | 1kΩ 1/4W J   |       |
| R6203           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6208           | QRE141J-392Y  | C R       | 3.9kΩ 1/4W J |       |
| R6211-13        | QRE141J-102Y  | C R       | 1kΩ 1/4W J   |       |
| R6214           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6216           | QRE141J-472Y  | C R       | 4.7kΩ 1/4W J |       |
| R6217           | QRE141J-561Y  | C R       | 560Ω 1/4W J  |       |
| R6218           | QRE141J-122Y  | C R       | 1.2kΩ 1/4W J |       |
| R6219           | QRE141J-152Y  | C R       | 1.5kΩ 1/4W J |       |
| R6220           | QRE141J-223Y  | C R       | 22kΩ 1/4W J  |       |
| R6221           | QRE141J-183Y  | C R       | 18kΩ 1/4W J  |       |
| R6222           | QRE141J-103Y  | C R       | 10kΩ 1/4W J  |       |
| R6223           | QRE141J-101Y  | C R       | 100Ω 1/4W J  |       |
| R6224-25        | QRE141J-102Y  | C R       | 1kΩ 1/4W J   |       |
| R6226           | QRE141J-473Y  | C R       | 47kΩ 1/4W J  |       |
| R6227           | QRE141J-103Y  | C R       | 10kΩ 1/4W J  |       |

| △ Symbol No.    | Part No.     | Part Name | Description  | Local |
|-----------------|--------------|-----------|--------------|-------|
| <b>RESISTOR</b> |              |           |              |       |
| R6228           | QRE141J-152Y | C R       | 1.5kΩ 1/4W J |       |
| R6229-30        | QRE141J-392Y | C R       | 3.9kΩ 1/4W J |       |
| R6250           | QRE141J-222Y | C R       | 2.2kΩ 1/4W J |       |
| R6251           | QRE141J-272Y | C R       | 2.7kΩ 1/4W J |       |
| R6252           | QRE141J-122Y | C R       | 1.2kΩ 1/4W J |       |
| R6253           | QRE141J-222Y | C R       | 2.2kΩ 1/4W J |       |
| R6255           | QRE141J-151Y | C R       | 150Ω 1/4W J  |       |
| R6256           | QRE141J-104Y | C R       | 100kΩ 1/4W J |       |
| R6257           | QRE141J-103Y | C R       | 10kΩ 1/4W J  |       |
| R6259           | QRE141J-272Y | C R       | 2.7kΩ 1/4W J |       |
| R6401           | QRE141J-822Y | C R       | 8.2kΩ 1/4W J |       |
| R6402           | QRE141J-152Y | C R       | 1.5kΩ 1/4W J |       |
| R6403           | QRE141J-103Y | C R       | 10kΩ 1/4W J  |       |
| R6404           | QRE141J-153Y | C R       | 15kΩ 1/4W J  |       |
| R6405           | QRE141J-103Y | C R       | 10kΩ 1/4W J  |       |
| R6406-07        | QRE141J-223Y | C R       | 22kΩ 1/4W J  |       |
| R6408           | QRE141J-821Y | C R       | 820Ω 1/4W J  |       |
| R6409           | QRE141J-153Y | C R       | 15kΩ 1/4W J  |       |
| R6410           | QRE141J-473Y | C R       | 47kΩ 1/4W J  |       |
| R6411           | QRE141J-105Y | C R       | 1MΩ 1/4W J   |       |
| R6412           | QRE141J-103Y | C R       | 10kΩ 1/4W J  |       |
| R6413           | QRE141J-332Y | C R       | 3.3kΩ 1/4W J |       |
| R6414           | QRE141J-562Y | C R       | 5.6kΩ 1/4W J |       |
| R6415           | QRE141J-102Y | C R       | 1kΩ 1/4W J   |       |
| R6416           | QRE141J-272Y | C R       | 2.7kΩ 1/4W J |       |
| R6417           | QRE141J-152Y | C R       | 1.5kΩ 1/4W J |       |
| R6418           | QRE141J-472Y | C R       | 4.7kΩ 1/4W J |       |
| R6419           | QRE141J-473Y | C R       | 47kΩ 1/4W J  |       |
| R6501-02        | QRE141J-102Y | C R       | 1kΩ 1/4W J   |       |
| R6503           | QRE141J-562Y | C R       | 5.6kΩ 1/4W J |       |
| R6505           | QRE141J-101Y | C R       | 100Ω 1/4W J  |       |
| R6601           | QRE141J-102Y | C R       | 1kΩ 1/4W J   |       |
| R6602           | QRK126J-220X | C R       | 22Ω 1/2W J   |       |
| R6603           | QRE141J-562Y | C R       | 5.6kΩ 1/4W J |       |
| R6604           | QRE141J-123Y | C R       | 12kΩ 1/4W J  |       |
| R6611           | QRE141J-331Y | C R       | 330Ω 1/4W J  |       |
| R6612           | QRE141J-103Y | C R       | 10kΩ 1/4W J  |       |
| R6613           | QRE141J-822Y | C R       | 8.2kΩ 1/4W J |       |
| R6614           | QRE122J-4R7  | C R       | 4.7Ω 1/2W J  |       |
| R6617           | QRE141J-122Y | C R       | 1.2kΩ 1/4W J |       |
| R6618           | QRE141J-154Y | C R       | 150kΩ 1/4W J |       |
| R6619           | QRE141J-470Y | C R       | 47Ω 1/4W J   |       |
| R6620           | QRE141J-223Y | C R       | 22kΩ 1/4W J  |       |
| R6621           | QRE141J-563Y | C R       | 56kΩ 1/4W J  |       |
| R6705           | QRE141J-223Y | C R       | 22kΩ 1/4W J  |       |
| R6710           | QRE141J-223Y | C R       | 22kΩ 1/4W J  |       |
| R6716           | QRE141J-223Y | C R       | 22kΩ 1/4W J  |       |

## CAPACITOR

| △ Symbol No. | Part No.     | Part Name | Description   | Local |
|--------------|--------------|-----------|---------------|-------|
| C6001        | QETN1HM-225Z | E CAP.    | 2.2μF 50V M   |       |
| C6002        | QFLC1HJ-473Z | M CAP.    | 0.047μF 50V J |       |
| C6003        | QETN1HM-225Z | E CAP.    | 2.2μF 50V M   |       |
| C6004        | QETN1CM-476Z | E CAP.    | 47μF 16V M    |       |
| C6005        | QETN1HM-225Z | E CAP.    | 2.2μF 50V M   |       |
| C6006        | QFLC1HJ-473Z | M CAP.    | 0.047μF 50V J |       |
| C6007        | QFLC1HJ-103Z | M CAP.    | 0.01μF 50V J  |       |
| C6010        | QFV71HJ-124Z | MF CAP.   | 0.12μF 50V J  |       |
|              |              |           |               |       |
| C6011-15     | QFLC1HJ-473Z | M CAP.    | 0.047μF 50V J |       |
| C6016        | QFV71HJ-124Z | MF CAP.   | 0.12μF 50V J  |       |
| C6017        | QFLC1HJ-473Z | M CAP.    | 0.047μF 50V J |       |
| C6018        | QFV71HJ-124Z | MF CAP.   | 0.12μF 50V J  |       |
| C6019-21     | QFLC1HJ-473Z | M CAP.    | 0.047μF 50V J |       |
| C6022        | QETC1CM-226Z | E CAP.    | 22μF 16V M    |       |
| C6023-24     | QFV71HJ-124Z | MF CAP.   | 0.12μF 50V J  |       |
| C6025        | QETN1CM-476Z | E CAP.    | 47μF 16V M    |       |
|              |              |           |               |       |
| C6026        | QFV71HJ-124Z | MF CAP.   | 0.12μF 50V J  |       |
| C6027        | QETN1CM-476Z | E CAP.    | 47μF 16V M    |       |
| C6028        | QFV71HJ-124Z | MF CAP.   | 0.12μF 50V J  |       |
| C6051-52     | QETN1HM-225Z | E CAP.    | 2.2μF 50V M   |       |

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

**CAPACITOR**

|          |              |           |         |       |
|----------|--------------|-----------|---------|-------|
| C6053-55 | QCS31HJ-181Z | C CAP.    | 180pF   | 50V J |
| C6101    | QETN1CM-107Z | E CAP.    | 100μF   | 16V M |
| C6102    | QENC1HM-225Z | BP E CAP. | 2.2μF   | 50V M |
| C6103    | QFLC1HJ-473Z | M CAP.    | 0.047μF | 50V J |
| C6104    | QFV71HJ-124Z | MF CAP.   | 0.12μF  | 50V J |
| C6105    | QETN1CM-476Z | E CAP.    | 47μF    | 16V M |
| C6106    | QETN1HM-106Z | E CAP.    | 10μF    | 50V M |
| C6108    | QCS31HJ-390Z | C CAP.    | 39pF    | 50V J |

|          |              |         |        |       |
|----------|--------------|---------|--------|-------|
| C6109    | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6134    | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6136    | QFLC1HJ-103Z | M CAP.  | 0.01μF | 50V J |
| C6137-38 | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6140-41 | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6142    | QETN1HM-105Z | E CAP.  | 1μF    | 50V M |
| C6143    | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6144    | QETN1HM-106Z | E CAP.  | 10μF   | 50V M |

|       |              |                  |        |          |
|-------|--------------|------------------|--------|----------|
| C6145 | QEMS1CM-107  | E CAP.           | 100μF  | 16V M    |
| C6146 | QFV71HJ-124Z | MF CAP.          | 0.12μF | 50V J    |
| C6147 | QETN1HM-225Z | E CAP.           | 2.2μF  | 50V M    |
| C6148 | QFZ0119-104  | M. PP. CAPACITOR | 0.1μF  | 200V ±3% |
| C6150 | QETN1CM-476Z | E CAP.           | 47μF   | 16V M    |
| C6151 | QFV71HJ-124Z | MF CAP.          | 0.12μF | 50V J    |
| C6203 | QETN1CM-227Z | E CAP.           | 220μF  | 16V M    |
| C6204 | QETN1CM-476Z | E CAP.           | 47μF   | 16V M    |

|          |              |         |        |       |
|----------|--------------|---------|--------|-------|
| C6205    | QCS31HJ-390Z | C CAP.  | 39pF   | 50V J |
| C6206-07 | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6255-56 | QFLC1HJ-102Z | M CAP.  | 1000pF | 50V J |
| C6257-58 | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6259    | QFLC1HJ-392Z | M CAP.  | 3900pF | 50V J |
| C6260    | QDC31HJ-470Z | C CAP.  | 47pF   | 50V J |
| C6261    | QFLC1HJ-104Z | M CAP.  | 0.1μF  | 50V J |
| C6262    | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |

|       |              |         |        |       |
|-------|--------------|---------|--------|-------|
| C6263 | QEMS1CM-107  | E CAP.  | 100μF  | 16V M |
| C6264 | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6265 | QEMS1CM-477  | E CAP.  | 470μF  | 16V M |
| C6266 | QDC31HJ-180Z | C CAP.  | 18pF   | 50V J |
| C6267 | QCS31HJ-120Z | C CAP.  | 12pF   | 50V J |
| C6401 | QFLC1HJ-222Z | M CAP.  | 2200pF | 50V J |
| C6402 | QETN1HM-105Z | E CAP.  | 1μF    | 50V M |
| C6404 | QFLC1HJ-472Z | M CAP.  | 4700pF | 50V J |

|          |              |         |        |       |
|----------|--------------|---------|--------|-------|
| C6405    | QETN1AM-227Z | E CAP.  | 220μF  | 10V M |
| C6407-08 | QFLC1HJ-102Z | M CAP.  | 1000pF | 50V J |
| C6409    | QCS31HJ-391Z | C CAP.  | 390pF  | 50V J |
| C6411    | QFLC1HJ-222Z | M CAP.  | 2200pF | 50V J |
| C6501    | QCS31HJ-101Z | C CAP.  | 100pF  | 50V J |
| C6502    | QFV71HJ-124Z | MF CAP. | 0.12μF | 50V J |
| C6601    | QFLC1HJ-103Z | M CAP.  | 0.01μF | 50V J |
| C6602    | QETN1CM-108Z | E CAP.  | 1000μF | 16V M |

|       |              |         |         |       |
|-------|--------------|---------|---------|-------|
| C6603 | QFV71HJ-124Z | MF CAP. | 0.12μF  | 50V J |
| C6605 | QETN1HM-225Z | E CAP.  | 2.2μF   | 50V M |
| C6611 | QETN1HM-106Z | E CAP.  | 10μF    | 50V M |
| C6612 | QFLC1HJ-104Z | M CAP.  | 0.1μF   | 50V J |
| C6613 | QETN1CM-227Z | E CAP.  | 220μF   | 16V M |
| C6614 | QFLC1HJ-473Z | M CAP.  | 0.047μF | 50V J |
| C6615 | QETC1EM-108Z | E CAP.  | 1000μF  | 25V M |
| C6616 | QETN1HM-475Z | E CAP.  | 4.7μF   | 50V M |

|       |              |        |         |       |
|-------|--------------|--------|---------|-------|
| C6617 | QETN1CM-476Z | E CAP. | 47μF    | 16V M |
| C6618 | QFLC1HJ-103Z | M CAP. | 0.01μF  | 50V J |
| C6702 | QFLC1HJ-473Z | M CAP. | 0.047μF | 50V J |
| C6704 | QETN1CM-476Z | E CAP. | 47μF    | 16V M |
| C6706 | QETN1CM-476Z | E CAP. | 47μF    | 16V M |
| C6708 | QFLC1HJ-473Z | M CAP. | 0.047μF | 50V J |

**COIL**

|       |              |      |       |   |
|-------|--------------|------|-------|---|
| L6101 | QQL01BK-150Z | COIL | 15μH  | K |
| L6201 | QQL01BK-151Z | COIL | 150μH | K |

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

**DIODE**

|          |                |             |  |  |
|----------|----------------|-------------|--|--|
| D6001-06 | 1SS133-T2      | SI DIODE    |  |  |
| D6007    | MTZJ9.1B-T2    | ZENER DIODE |  |  |
| D6101-04 | 1SS133-T2      | SI DIODE    |  |  |
| D6150-53 | 1SS133-T2      | SI DIODE    |  |  |
| D6401    | MA4068N/Z1/-T2 | ZENER DIODE |  |  |
| D6402    | MTZJ4.3A-T2    | ZENER DIODE |  |  |
| D6403-04 | 1SS133-T2      | SI DIODE    |  |  |
| D6501-02 | 1SS133-T2      | SI DIODE    |  |  |

|          |             |             |  |  |
|----------|-------------|-------------|--|--|
| D6505-07 | MTZJ5.1B-T2 | ZENER DIODE |  |  |
| D6603    | 1SS133-T2   | SI DIODE    |  |  |
| D6605    | MTZJ11A-T2  | ZENER DIODE |  |  |
| D6606    | 1SS133-T2   | SI DIODE    |  |  |

**TRANSISTOR**

|          |                |                  |  |  |
|----------|----------------|------------------|--|--|
| Q6001-03 | 2SC3311A/QR/-T | SI TRANSISTOR    |  |  |
| Q6101    | 2SC3311A/QR/-T | SI TRANSISTOR    |  |  |
| Q6102    | 2SA1309A/QR/-T | SI TRANSISTOR    |  |  |
| Q6103-06 | 2SC3311A/QR/-T | SI TRANSISTOR    |  |  |
| Q6107    | DTC124ESA-T    | DIGI. TRANSISTOR |  |  |
| Q6130-31 | 2SC3311A/QR/-T | SI TRANSISTOR    |  |  |
| Q6150-51 | 2SC3311A/QR/-T | SI TRANSISTOR    |  |  |
| Q6152    | 2SA1309A/QR/-T | SI TRANSISTOR    |  |  |

|          |                |               |  |  |
|----------|----------------|---------------|--|--|
| Q6201    | 2SA1309A/QR/-T | SI TRANSISTOR |  |  |
| Q6204    | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |
| Q6206    | 2SA1309A/QR/-T | SI TRANSISTOR |  |  |
| Q6207-10 | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |
| Q6250    | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |
| Q6401    | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |
| Q6402    | 2SA1309A/QR/-T | SI TRANSISTOR |  |  |
| Q6403-05 | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |

|          |                |               |  |  |
|----------|----------------|---------------|--|--|
| Q6501    | 2SA1309A/QR/-T | SI TRANSISTOR |  |  |
| Q6601    | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |
| Q6602    | 2SA1309A/QR/-T | SI TRANSISTOR |  |  |
| Q6603-04 | 2SC3311A/QR/-T | SI TRANSISTOR |  |  |

**IC**

|        |            |                 |  |  |
|--------|------------|-----------------|--|--|
| IC6001 | MM1311BD   | I.C. (MONO-ANA) |  |  |
| IC6002 | AN7809F    | I.C. (MONO-ANA) |  |  |
| IC6101 | TDA8366/N4 | I.C. (MONO-ANA) |  |  |
| IC6102 | TDA4665    | I.C. (MONO-ANA) |  |  |
| IC6601 | AN5265     | I.C. (MONO-ANA) |  |  |

**OTHERS**

|           |               |                   |  |  |
|-----------|---------------|-------------------|--|--|
| CN6001-02 | CHB303W-25P-J | 25P DIN M. CONNec |  |  |
| CN6006    | CH42151-010RT | RECEPTACLE        |  |  |
| J6001-02  | CEMB021-002   | BNC CONNECTOR     |  |  |
| J6004     | QMD2B04-001   | MINI CONNECTOR    |  |  |
| J6005     | CEMN096-001   | RCA JACK BLOCK    |  |  |
| MD6201    | QAX0407-001   | COMB FILTER       |  |  |
| MD6202    | CE42464-001   | BPF&DL MODULE     |  |  |
| X6250     | CE41115-001Z  | CRYSTAL           |  |  |
| X6251     | CE41651-001Z  | CRYSTAL           |  |  |



**FILTER P.W. BOARD ASS'Y (FX-9060A)**

| Symbol No. | Part No. | Part Name | Description | Local |
|------------|----------|-----------|-------------|-------|
|------------|----------|-----------|-------------|-------|

**RESISTOR**

|       |             |       |      |       |
|-------|-------------|-------|------|-------|
| R9901 | QRF154J-680 | UNF R | 68 Ω | 15W J |
|-------|-------------|-------|------|-------|

**CAPACITOR**

|       |             |                |             |   |
|-------|-------------|----------------|-------------|---|
| C9901 | QFZ9036-104 | M.F. CAPACITOR | 0.1μFAC250V | M |
| C9902 | QFZ9036-104 | M.F. CAPACITOR | 0.1μFAC250V | M |
| C9903 | QFZ9036-104 | M.F. CAPACITOR | 0.1μFAC250V | M |

**TRANSFORMER**

|        |             |                 |  |  |
|--------|-------------|-----------------|--|--|
| TH9901 | CEKP002-003 | W.P. THERMISTOR |  |  |
|--------|-------------|-----------------|--|--|

**OTHERS**

|        |                |                |        |  |
|--------|----------------|----------------|--------|--|
| CN9003 | CHB801M-04R-J  | GTS CONNECTOR  |        |  |
| CN9004 | CHB801M-04R-J  | GTS CONNECTOR  |        |  |
| CN9014 | CH42145-804T   | VH POST HEADER |        |  |
| CN90E6 | CH42145-802S   | VH POST HEADER |        |  |
| F9901  | QMF51D2-3R15J1 | FUSE           | 3.15 A |  |
| J9901  | QMCB006-C01    | AC INLET       |        |  |
| LF9901 | CELF001-001J1  | LINE FILTER    |        |  |
| LF9902 | CELF010-001J6  | LINE FILTER    |        |  |

**RESET MODULE P.W. BOARD ASS'Y (FX-M010A)****RESISTOR**

|          |              |     |       |        |
|----------|--------------|-----|-------|--------|
| R0551-52 | QRE141J-102Y | C R | 1kΩ   | 1/4W J |
| R0553-54 | QRE141J-104Y | C R | 100kΩ | 1/4W J |
| R0555    | QRE141J-103Y | C R | 10kΩ  | 1/4W J |

**CAPACITOR**

|       |              |        |        |       |
|-------|--------------|--------|--------|-------|
| C0551 | QETN1HM-474Z | E CAP. | 0.47μF | 50V M |
| C0552 | QETN1HM-226Z | E CAP. | 22μF   | 50V M |
| C0553 | QETN1CM-476Z | E CAP. | 47μF   | 16V M |

**TRANSISTOR**

|       |                |                |  |  |
|-------|----------------|----------------|--|--|
| Q0551 | 2SA965/0Y/     | SI. TRANSISTOR |  |  |
| Q0552 | 2SC3311A/QR/-T | SI. TRANSISTOR |  |  |

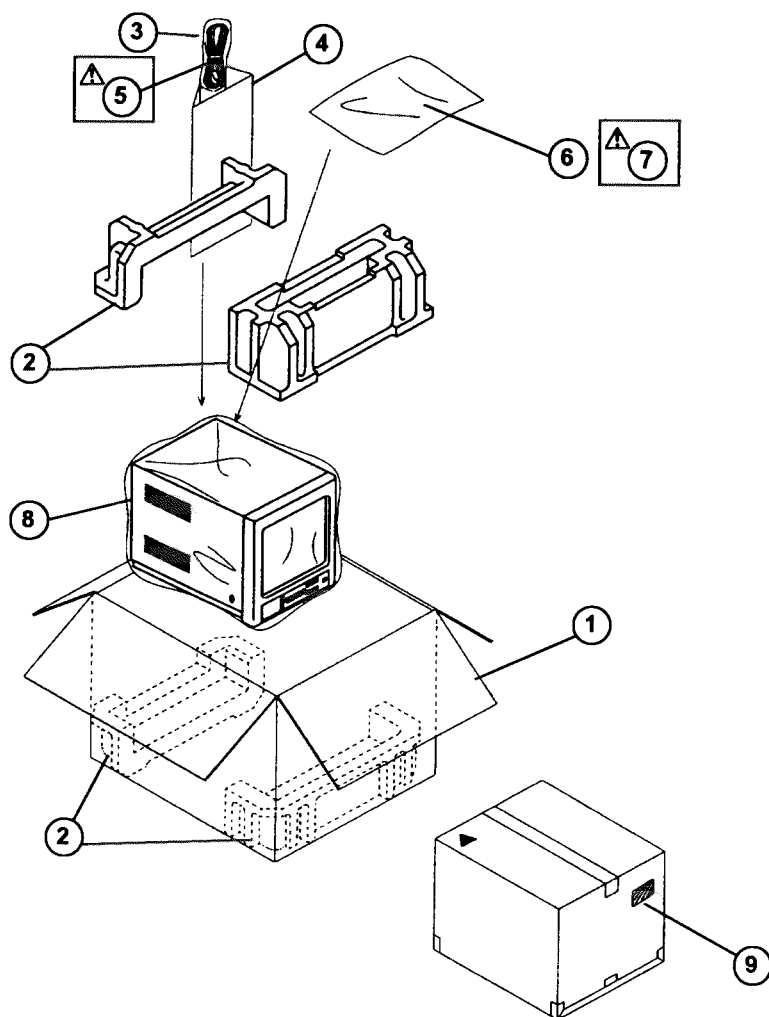
**IC**

|        |          |                 |  |  |
|--------|----------|-----------------|--|--|
| IC0551 | TC4538BP | I.C. (DIGI-MOS) |  |  |
|--------|----------|-----------------|--|--|

**OTHERS**

|        |                |         |  |  |
|--------|----------------|---------|--|--|
| CN0006 | CH42151-010PSP | JL PLUG |  |  |
|--------|----------------|---------|--|--|

# PACKING



## PACKING PARTS LIST

| △ Ref.No. | Part No.       | Part Name        | Description  | Local |
|-----------|----------------|------------------|--------------|-------|
| 1         | CP11224-A64    | PACKING CASE     | 4pcs in 1set |       |
| 2         | CP11658-00A    | CUSHION ASSY     |              |       |
| 3         | QPGA012-03005  | POLY BAG         |              |       |
| 4         | LC40092-001A   | P.CORD CASE      |              |       |
| △ 5       | QMPP010-200-JC | POWER CORD       |              |       |
| 6         | CP30975-001    | POLY BAG         |              |       |
| △ 7       | LCT0120-001A   | INST.BOOK        |              |       |
| 8         | CP30974-004    | POLY BAG         |              |       |
| 9         | CM47385-00A    | POS/SERIAL LABEL |              |       |

# JVC

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